


3-9 October 1985
*It's the best selling weekly*
Vol 4 No 40

# Sinclair holds lid on UK 128

FURTHER details of the Spanish Spectrum 128 Micro have emerged following its launch at the Barcelona Computer Fair on Monday, September 23 (see *Popular Computing Weekly*, September 26), although Sinclair in the UK is playing down the event

There is still no definite release date decided for any similar Spectrum 128 launch in the UK

The new Spanish machine, according to a spokesman for Investronica, Sinclair's Spanish distributor and co-producer of the new micro has a Spectrum Plus-style key board but with an extension to the case on the right hand side including numeric keypad and cursor cluster

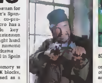
The micro will sell in Spain for under £288

The additional memory is bank-switched in 16K blocks, and can also be used as a dynamic Ram disc

It has the equivalent of Interface 1 built in, which gives it an RS232 port and a

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● C128 price cut
● news page 4

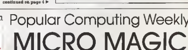


**SF on your micro.**

**LEFT:** Collins is working on the game of *The Knights of God*, based on the TV serial from TV South.

**ABOVE:** CRL will shortly release *Bladerunner* on the C64 and Spectrum

Stories on Page 4 ▶







**STARTS THIS WEEK! We are giving away new Amstrad CPC 6128 128K micro – worth £395 – every seven days until Christmas! And one of these micros – complete with built-in disc drive and colour monitor could be yours!**

Not only that, but every card wins a free gift – special *Popular Computing Weekly* Cassette Labels.

To find out if you've won this week's Amstrad computer system just detach the special Micro Magic card from the front of this magazine and .

*TURN TO PAGE 10* ▶

INSIDE ❯ FREE GIFT – THE LAST COUPON TO CUT – SEE PAGE 8 ❯

AND ON THE EIGHTH DAY EPYX CREATED...

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COMPUTER SOFTWARE

# CONTENTS

Vol 4 No 40



The Popular T-shirt – see page 9



## EDITORIAL

Since preliminary pricings were announced in July, Commodore has twice had to cut the cost of its new C128 micro in efforts to make the machine more attractive Yet the company seems to be having difficulty matching the value-for-money offered by Amstrad with its CPC6128

At first Commodore tried a £269 price for the C128 To use the machine a disc unit is needed and the new 1571 intelligent high storage-capacity drive seemed to fit the bill for the US Unfortunately, UK needs are somewhat different and the 1571's £299 tag – pushing the C128 package up to £569 – looked pretty poor against the £399 Amstrad with disc – especially since the Amstrad also includes a colour monitor

So Commodore UK first ordered a cheaper £126 disc unit for the UK and now is bundling the C128 and disc together saving a further £28 bringing the whole pack down to £498 99

But is it enough? You still buy an Amstrad 6128 with colour monitor instead and still have £80 in your pocket It's a big problem for Commodore which is offering in its defence that the C128 – because it uses a version of Commodore's aged 1541 5¼ inch disc mechanism – is more straightforwardly compatible with CP/M titles than the 6128 Also Commodore is hoping the huge library of over 5,000 titles for the C64 (with which the C128 is compatible) will sell micros. I'm not so sure

Unfortunately, Commodore cannot afford for the C128 to be a flop It has just announced a $124m loss for the last three months and is relying on the C128 – together with the Amiga – to reverse the trend.

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ABC

90 082 copies sold every week (Jan June 1984 ABC)

**Popular Computing Weekly. Tel: 01-437 4343.**

**How to submit articles** Articles which are submitted for publication should not be more than 2000 words long The articles and any accompanying programs, should be original It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted. **Accuracy** *Popular Computing Weekly* cannot accept any responsibility for any errors in programs we publish, although we will always try our best to make sure programs work.

Computer Trade Association Magazine of the Year

# CBM cuts C128 and hits $ snag

COMMODORE has cut the cost of its C128 system for the second time in three months with a bundling deal to combine the C128 and 1570 disc drive

The new offer brings the price of the two products together down £30 to £449 99

The 1570 disc drive is an up-graded version of the existing C64 1541 disc drive. "The 1570 looks like a 1541 but in the same livery as the C128," confirmed a Commodore spokesman.

While the C128 is already on sale in the US, the machine has not yet appeared in the shops in the UK

"Commodore UK has had teething problems on the C128 production line at Corby," the spokesman stated.

Officially, the machine is supposed to reach the shops in early October – whether or not this will still happen is still unclear.

The new C128 faces strong competition, though, from the Amstrad CPC6128 and the PCW8256 models

"The C128 is fully C64 compatible – as a basic strength that is a very significant plus," explained the Commodore spokesman.

"Also it uses industry standard 5¼" discs, and can read a wide variety of formats, including KayPro Osborne, and IBM software "

Yet the Amstrad 6128 even including colour monitor still costs only £399 While it does not use 5¼" discs, an Amstrad spokesman claimed that one leading software supplier, Tradesoft is already making its entire catalogue of business software available on the 3 inch disc format and "other software houses are apparently set to follow suit '

He claimed the PCW8256 will compete directly with the C128 "although the C128 is twice the price"

"Commodore has a couple of year's start on us in software," he said, "but we are rapidly catching up "

Commodore UK has also announced more details of its new Christmas Compendium package deal for the C64 Priced at £199 it includes a C64, a 1350 Data cassette unit, *Music Maker Designer's Pencil* and the C64 version of *The Secret Diary of Adrian Mole* plus the book *The Growing Pains of Adrian Mole*

Meanwhile, in the US, Commodore International is involved in negotiating with its principle lending banks to amend its loan arrangements, following a loss over the last three months of $124m.

"We are expecting a satisfactory outcome to these talks, although it may take a while " said a spokesman for Commodore US Analysts in the States have commented that progress with the new C128 and Amiga machines will probably outweigh the banks' desire to see the debts paid off as soon as possible.

# Spanish Spectrum

continued from page 1

Microdrive interface Additionally, it can be used to control electronic musical instruments which use the MIDI protocol via the RS232 port

It can output sound either as audio signals to a monitor, or as modulated signals to a TV, in much the same way as the Commodore 64 The machine, apparently, does not include the expected AY-38912 sound chip – the same device as in the Amstrad 464

All peripherals and software for the Spectrum Plus will also work directly on the Spectrum 128

The machine was developed as a joint venture between Sinclair and Investronica with some of the research effort being shared between the UK and Spain

Investronica will be selling the Spectrum 128 in Spain and in Spanish speaking countries, which include most of South and Central America but the machine will not be distributed to other European countries The machine will be priced between 50,000 and 70,000 pesetas, approximately £215 to £299

The version of the machine which Sinclair is now expected to launch in the UK next spring appears similar to the Spanish micro It has two 16K blocks of Rom, one containing the original Spectrum Basic, and the other holding extended Basic It also has a screen which is relocatable in memory, and unlike the Spanish micro includes an AY 38912 on sound chip with definable envelopes

A number of software houses are rumoured to have already been given development versions of the Spectrum 128, but most are still bound by non-disclosure agreements

A Mikro-Gen spokesman said that the company had had a memory map of the new machine for some months, but not the actual micro itself

Another source stated that Ocean had a prototype and that a version of *The Neverending Story* is being written for it David Ward, Ocean's managing director, refuted the speculation.

The Edge is also thought to have had one of the new machines Managing director Tim Langdell also refused to comment, though the company is believed to be working on an enhanced version of its new *Fairlight* program.

A source at a leading distributor of Sinclair products said "because of Sinclair's operational problems, there is no way the company could bring through enough producooo to service the demand had they launched a 128K model this Christmas "

It was also suggested that Sinclair's creditors would have been unwilling to tool up to produce a new micro

A Sinclair spokesperson said of the Spectrum 128, "We are not giving out any details of the machine – it is for the Spanish market so we are not publicising it We do not have a release date for the machine in the UK '

# Micro SF

TWO new programs feature science fiction as their theme

*The Knights of God*, a new science fiction TV South serial to be shown next year, has already been licenced by Collins The series follows two teenage rebels at odds with a military dictatorship in the year 2020

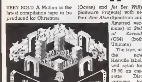
The Knights of God

Bladerunner

*Bladerunner* from CRL has you bounty-hunting, reprodroids – vicious robots The game will be released in October first on the Commodore 64 and shortly afterwards on the Spectrum. Price for both will be £8 95

# Christmas chart-toppers

THEY SOLD A Million is the latest compilation tape to be produced for Christmas


*Atic Atac* on Spectrum

On the tape – for the Spectrum, Commodore 64 and Amstrad – are four titles *Beach-head* (US Gold), *Daley Thompson's Decathlon* (Ocean) and *Jet Set Willy* (Software Projects) with either *Atic Atac* (Spectrum and Amstrad versions) or *Staff of Karnath* (C64) (both Ultimate)

The tape, on the new Hitsville label, will retail for £9 95 on cassette Disc versions for the C64 and Amstrad will be priced at £12 95

All five titles involved have been chart-topping games, with combined sales of over one million.

# The hackers committed

THE TWO men at the centre of the Prestel 'hacking' case have now been committed for trial at Southwark Crown Court

Robert Schifreen and Stephen Gold, described as freelance journalists face charges under Section 1 of the Forgery and Counterfeiting Act 1981 and appeared between September 22-23 in committal proceedings before Bow Street magistrates court

The two were arrested in a late-night swoop on their homes in London and Sheffield in April this year by police and British Telecom officials engaged in investigations connected with the 'Duke of Edinburgh hack' on British Telecom's Prestel Viewdata system

It is alleged that between November 22-25 and on December 25 1984, Stephen Gold forged computer discs recording information on Prestel's Keats and Dickens computers Robert Schifreen has been charged with, between November 7 and February 17, forging an electronic device for recording information on Prestel's Gateway and Kipling computers

The case now goes to trial

# Fast sales for PCW 8256

FIRST stocks of the new Amstrad PCW 8256 micro are now in the shops

Early indications from Dixons branches seem to indicate that the machines are selling fast The Holborn Circus, London branch received 10 machines on Friday, September 26 and already had orders for all of them.

The Oxford Street branch was in a similar position with most of the first shipment already spoken for

An Amstrad spokesman said' This is entirely typical

"The first supplies have now reached Dixons, and a reasonable quantity have been spread around selected Dixons branches "

# Atari converts

TALENT has converted its two QL text adventures – *The Lost Kingdom of Zkul* and *West* – on to the Atari ST

The two programs are being sold together on one disc priced at £24 95, available from the beginning of November

# SILVER RANGE... Seeing

**THE HELM** Adventure
An amusing stylish text adventure

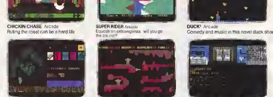
**HELICHOPPER** Arcade
Fast and smooth multi-screen action

**MR FREEZE** Arcade/Strategy
Six compartments, each tougher to de-ice

**CHICKIN CHASE** Arcade
Ruling the roost can be a hard life

**SUPER RIDER** Arcade
Equestrian extravaganza will you go the course?

**DUCK!** Arcade
Comedy and music in this novel duck shoot



**CYLU** Arcade/Strategy
Can you complete this supreme test of logic and skill?

**CAVERNS OF ERIBAN** Arcade
Supply the mines against terrible odds

**SUBSUNK** Adventure with Graphics
Trapped on the sea bed in a scuppered submarine



**VIKING RAIDERS** War Game
A test of strategy against the computer or friends

**RUN BABY RUN** Arcade
Multi-car cop chase and shoot-out

**SPIKE** Arcade/Strategy
Help Spike to find the golden Dream-Sphere

**DON'T PANIC** Arcade/Strategy
Amusing and challenging, a game with a difference

**DON'T BUY THIS!** Compilation
Five of the worst games you have ever seen

**THE HACKER** Arcade/Strategy
Terminal to modem telephone network to mainframe


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HEADACHE Arcade
Nervous Ned's quest to serve the Brain
BIRD STRIKE Arcade
Wing the planes and shoot the pigeons
THE WILD BUNCH Strategy/Adventure
Accused of murder, hunt the real killer
MICKEY THE BRICKY Arcade
Four screens packed with fun
BOOTY Arcade/Adventure
Twenty holds full of pirate loot
SHORT'S FUSE Arcade Strategy
Sam Short secret agent versus Boris and his bombs
FIREBIRD SILVER CATALOGUE
AMSTRAD CPC 464
026 MR FREEZE
029 THE WILD BUNCH
042 SHORT'S FUSE
044 SUBSUNK
BBC MODEL B
003 BIRD STRIKE
005 DUCK!
022 ESTRA
023 THE HACKER
025 MR FREEZE
ELECTRON
027 BIRD STRIKE
030 THE HACKER
COMMODORE 64
015 MR FREEZE
017 BOOTY
019 HEADACHE
024 GOGO
028 ESTRA
032 SUBSUNK
034 THE HELM
041 CIRCUS CIRCUS
046 CYLU
048 CAVERNS OF ERIBAN
049 SUPER RIDER
VIC 20 (UNEXPANDED)
002 MICKEY THE BRICKY
SPECTRUM 16K 48K
006 RUN BABY RUN
035 DON'T PANIC
SPECTRUM 48K
008 VIKING RAIDERS
012 THE WILD BUNCH
014 MR FREEZE
016 BOOTY
031 SUBSUNK
033 THE HELM
036 SHORT'S FUSE
037 HELICHOPPER
040 DON'T BUY THIS!
043 FAHRENHEIT
047 SPIKE
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# Letters

SPECTRUM
128K

## Big noses

Hooray! Gremlin Evans cartoons are back – good for Silversoft. They've got themselves a good game with Delta 4's *Bored of the Rings* too.

Poor old Gremlin – he still can't seem to get out of the habit of drawing all his characters with big noses.

*Ross Phillips*
*216A Mare Street*
*London E8*

## Veiled excuses

In reply to Ivor Spital's letter from Amstrad regarding us suckers who bought the Amstrad 664.

I agree with Mr Spital, in as much that the 664 has a much nicer styled keyboard than the 6128 and it also feels better. I don't think anyone is saying it doesn't represent good value for money.

The real point, though, that both Mr Spital and Mr Sugar seem to be ignoring is that we are upset about the machine being superseded after such a short time and, to rub salt into the wound, more is now being offered for less.

Amstrad seems to be trying to sweep the entire matter under the mat, by giving us thinly veiled excuses, hoping that perhaps we will all forget and accept our mistake. I think I can speak for most 664 owners and say, if we knew there was going to be a new machine after such a short and unreasonable time, we would not have bought the 664.

As there must be only a relatively small number of 664 owners, Amstrad are in a good position to do a master stroke in PR work. They could offer a free Ram up-grade (page 5, 19 September issue), to all the people who bought the 664 at its full price or pre-6128 launch. I'm sure it would not upset Amstrad's finances.

This would show other computer owners that Amstrad cares about its customers and also it would restore a lot of people's faith in the company.

*Vincent Oliver*
*47 The Crescent*
*Croydon*
*Surrey*

## In the black

The question of 'How much would it cost to equip the QL to the ST's standard of hardware' was posed by D Stocks, writing in the September 5 issue.

After some research I came up with a figure of near to £1,000 – including the QL – while the ST weighs in at around £750, leaving the ST £150 in the black.

The snag is that the advantage of being able to start off with only £450 (QL plus colour monitor) is considerable. Then you can build up your system whenever, and by how much you like. That alone makes the QL come up trumps – I've never had three-quarters of a grand to spend all at once on a computer, for sure.

*Jon Prestidge*
*17 Highfield Drive*
*Sutton Coldfield*
*West Midlands*

PS Mr Stock is wrong about the QL's data bus. It is not multi-plexed. Sinclair chose the 68008 version of Motorola's chip series to make connections with cheap, widely available 8-bit devices easy, fast and reliable.

## New machines

Atari and Commodore are both bringing out new 68000-based machines. Atari's 520ST costs £750 and has disc, monitor and 512K memory. Commodore's Amiga has costs over £1,000 and has disc, 256K and no monitor.

The Atari ST is a good machine but the Amiga is as much an advance in technology now as the old Atari 800 was when it first appeared.

Yet, the reason the Atari 800 didn't sell as well as it should have was because it was too highly priced at $550.

If I was Commodore I would want to sell as many Amigas as there are Spectrums around. The only way I could do this though would be to sell the Amiga in the UK for around £500.

I know the Amiga is the most advanced of the new micros, but if you put it side-by-side with the ST and Amstrad 6128 I'm sure the public will go for the one that offers the most at a price they can afford. Can most people afford over £1 000? How will Commodore make it obvious that the Amiga is so special?

*M D Barn*
*Basildon*
*Essex*

## Needless heroism?

I purchased *Arnhem* for my Spectrum and agree with your reviewer that it is an excellent program. However, he also said that the Market Garden Operation was "the worst case of needless heroism since the Charge of the Light Brigade".

Market Garden was defeated – and then only just – by an extraordinary combination of circumstances: poor weather, a lack of initiative on the part of the follow up forces, the unexpected presence of a German formation which was 'resting', the theft of British supplies by American troops with the implicit approval of General Patton, and a false report that the verges of the roads leading to Arnhem were mined.

In contrast, the Charge of the Light Brigade was an unplanned attack against a prepared opposition – a totally different thing.

*I Moseley*
*5 Benson Avenue*
*East Ham*
*London E6*

## Gift Coupon

Here is the last of the four coupons you will need to claim your *Popular Computing Weekly* Free Gift – either *Tony Kendle's Arcade Addicts' Handbook* or a Sunshine game cassette.

Cut out the coupon and stick it on to the special reply flap attached to the front of the September 12 issue.

Free Gift Coupon No 4

# Micro Waves

Micro Waves is a new feature to *Popular*, bringing you over the weeks, news, reviews and the like, concerning micro related radio and TV output. We've tried to cover everything but if you know of a programme that's slipped through our fine mesh net, or maybe you want to comment about one, then drop us a line at *Popular*.

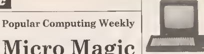
| Station | Programme | Broadcast Time |
|---|---|---|
| BBC 2 TV | Micro Live | 11th October 7.30-8.00pm |
| BBC Radio Sussex | The Computer Programme | 12th October 3.30pm |
| Swansea Sound | Lunchbox | 5th October 1.30-2.00pm |
| Moray Firth Radio | The Mighty Micro | Monthly Mondays 7-8.30pm |
| Radio Broadland | The Computer Programme | 5th October 7.00pm |
| Radio Broadland | Broadland Byte | 3rd October 8.45pm |
| Radio Orwell | Nick Canty's Computer Spot | 8th October 11.30am |
| BBC Radio Manchester | Computers | 5th October 6.45pm |

With HTV's *Video and Chips* and Thames's *Database* just going off air, it looks like the autumn micro related TV scheduling has been left to Auntie Beeb, with *Micro Live* starting a new weekly series (a 20 week run) on 11th October. Released from a restrictive monthly format, we can expect an up-to the-minute, fast moving show from Leslie 'Here's just an ordinary home micro – a BBC Model B' Judd and Co.

More details next week.



*Popular* cassette labels



## Popular Computing Weekly

# Micro Magic

The Amstrad CPC6128

We are giving away an Amstrad CPC6128 128K micro – worth £399 – every seven days until Christmas. Not only that, but every Micro Magic card is a winner – every card wins a runner-up prize of free Special *Popular Computing Weekly* cassette labels

**How to find out if you win this week**
To find out if you are a prize winner this week this is what you must do

1) Detach your personal **Micro Magic** card from the front of this issue – make sure you keep it. Even if you don't win this week you will need it to find out when you win between now and Christmas
2) Scratch off the silver coating from your card to reveal you special personal **Micro Magic** number
3) Key in the computer program listing printed here into your micro and Run the program.
4) Input your special **Micro Magic** number as data in the program when requested and press *Enter*
6) The program will tell you if you have won a prize this week and what it is
6) If you have won a prize you can claim it by filling in the coupon on the back of your special **Micro Magic** card **Then send the completed card off to Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.** Don't forget to fill in both your name and address and also both your Winning Micro Magic Answer from this week and your special Micro Magic Number
7) If you haven't won this week, don't give up hope Keep your **Micro Magic** card and use it to find out if you win with next week's Micro Magic computer Program the same card will last you right through to Christmas, so don't throw it away – you could miss the opportunity to win

```
5  PRINT "Input your personal Micro
   Magic number:"
10 INPUT x
15 FOR z=1 TO 3
20 LET x=2 + (x+27)
30 LET x=x + 27
40 LET y=2 * x + 1050
45 NEXT z
50 IF y=130376 THEN GOTO 70
55 IF y=755688 THEN GOTO 80
60 PRINT "Better luck next week
65 GOTO 60
70 PRINT "You have won an Amstrad
   CPC6128"
75 GOTO 70
80 PRINT "You have won cassette
   labels!"
85 GOTO 80
```

**Micro Magic: Week 1 Program listing**

### This week's winning Micro Magic Numbers: 130376 and 755688

**If you think you've won complete the form on the back of your Micro Magic card and send it to: Micro Magic, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 7PP.**

Micro Magic cards can only be obtained in line with the rules outlined by Scot Press. Participants are entitled to only one card each. Cards and accompanying documentation can be obtained free of charge by writing to Scot Press, 12-13 Little Newport Street, London WC2H 7PP

# The Popular T-shirt

Ever since *Popular Computing Weekly* began, people have been pleading for a way to show their allegience to the *Popular* cause We've turned away cheques, money orders British Telecom shares – even Krugerands and other tax free gifts

But here's your chance to show the world that you read *Popular Computing Weekly* and are not ashamed Take at look at this picture – wouldn't you like to look like that? Well now's your chance!

The *Popular Computing Weekly's Miami-Vice*-style colour-coded black and white T-shirt comes to you complete with all necessary leads and manuals (none) and includes a free transparent plastic bag for easy storage

Price is an incredible £3 99 ( + 25p postage and packing) and the garment comes in Small, Medium, Large, and Extra-large sizes

Write a cheque or postal order payable to *Popular Computing Weekly* and send it off with a completed order from to Popular Computing Weekly T-Shirt Mega Offer, 12-13 Little Newport Street, London WC2H 7PP. Allow 28 days for delivery

We guarantee that nowhere on the T-shirt does Frankie say anything at all

Yup, sounds like the garment for me
Rush me ( ) T shirts sizes . I enclose my cheque for £ made payable to *Popular Computing Weekly*
Name ..........................................
Address. ..........................................
..........................................
..........................................

# Thames TV/Popular Computing Weekly/GOSH




# Charity Appeal

## 5,000 game cassettes to be given away

**At the end of October, Thames Television will screen a 24 hour television extravaganza called the Thames Television Telethon 85 to raise money for charity.**

**This massive event – the first 24-hour show on British Television – not only features a host of stars from television and radio but a whole range of fund raising activities – the target to raise over a million pounds for charity.**

## Popular Computing Weekly and the Telethon

**Popular Computing Weekly** is proud to form part of this giant fund-raising effort and we hope our readers will join with us in trying to raise as much money as possible

We hope to be able to present a cheque from our readers live on the show when it is broadcast between 7 30pm on October 29 and 7 30 on October 30

We feel sure that you will want to help as raise as much money as possible by making a donation of whatever size to the address below

## But that's not all!

In conjunction with GOSH – the Guild of Software Houses – we have a bonus for those making a contribution of £1 00 or more – 5,000 great computer programs, donated by GOSH members, to be given away free!

## The Games

For a contribution of £1.00 or more we will send you a computer game for your micro We can't guarantee what you'll get but the 5,000 tapes include such titles as *Choplifter*, *Attack of the Mutant Camels* and *Laserzone*, but we will match up the game to your micro (Don't forget to tell us what machine you have )

## Who will benefit?

Children and young people in, or from, the Thames Television transmission area who are disabled, disadvantaged, seriously ill, at risk, or in need.

**The Priority Areas**

1. Children and Young People with Disabilities
2. Self-help and Community Initiatives for Children and Young People
3. Training and Employment
4. Recreation and Leisure
5. Children and Young People with Particular Needs

**Your money**

All of your money will go towards the charities None of it will be used for our administration so you can be sure it will all go to a good cause.

## How to donate

Fill the coupon below, remembering to tell us what micro you have and including your donation to the Telethon.

Make your cheque or postal order payable to **The Thames Help Trust Ltd** and cross it A/C Payee Not Negotiable.

Please be as generous as you can to help to make this particular scheme one of the most successful money raisers in the whole Telethon event

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## All for art

**Program** *Illustrator* **Micro** CPC 464/664 etc **Price** £16 95 **Supplier** Gilsoft, 30 Hawthorn Road, Barry, South Glamorgan CF6 8LE

I won't insult your intelligence by pretending you don't know what the *Quill* is or that the *Illustrator* is designed to allow you to add graphics to the adventures you write with it If you've bought *Quill* and like it than wild horses probably wouldn't keep you from buying this too – but is it good enough to convince new users to fork out nearly thirty quid on the combined package?

The first point of note is that the *Illustrator* is not a screen designer – the artwork you produce is not saved as screen Ram, rather it produces a series of machine code graphics instructions that are interpreted at the correct point in the game and the entire picture redrawn This means that, as long as you avoid too complex shapes, many pictures can be produced using very little memory space This contrasts to a screen file which takes up 16K no matter how simple or convoluted the artwork The obvious drawback to the system is that it takes time to redraw the picture but the good news is that it runs very fast indeed – comparable to professional offerings from companies such as Level 9 which use a similar technique

Other advantages are that once the command sequence for a shape is defined it is very easy to alter the size of the parameters it holds – in English this means that if you draw a shape you can easily fill the picture, or later pictures with recreations of the same thing of different sizes and colours

You are also provided with a very wide range of shading patterns to use in the fill routine It's ingenious and powerful

There are, however certain types of graphic effect that are almost impossible to do with this system and the end result always seems to tend toward cubism. It most definitely couldn't cope with Terry Greer style graphics (now wouldn't that be a utility and half!) But if you don't mind simple blocky looking pictures, then the biggest disadvantage to the *Illustrator* is that the code it produces only works with the *Quill* and can't be bolted on to your own program.

**Tony Keadle**

## Pinball

**Program** *Macadam Bumper* **Micro** Spectrum 48K **Price** £7 95 **Supplier** PSS, 452 Stoney Road, Coventry CV6 5DG

It seemed to be part of being teen-aged. Part of an era of juke boxes, rock 'n' roll and ruckings as mods collided with rockers I'm talking about the pinball machine

Now what has happened? The *Space Invader* invaded the space of the amusement hall and soon it was all laser discs and machines that answered you back Lament the passing of the spring and ball bearing

The French respect popular history though and from across the Channel, though with a taste more Trans Atlantic Burger than Gallic Garlic, comes *Macadam Bumper*, a pinball experience I'd happily feed with shillings

Amazingly, despite a rather small playing area, it has just the right feel with a ball that rolls and rebounds most satisfyingly, snappy flippers and even a jolt mechanism! Then there's the chance to design your ideal table, even down to colour and scoring using the cursor

This is so easy it should extend the program's playing life no end

My only complaints are that the instructions aren't always 100% clear, though I suppose I should have guessed that before you can have a multi-player game you have to insert more coins, and the price is over the odds After all, that's an awful lot of shillings

Still, for your money you get Tommy meets the micro, which should please all pin balled pin heads!

**John Minson**

## Dr data

**Program** *Amstest* **Micro** CPC 464 only **Price** £8 95 **Supplier** Amsoft, Brentwood House 169 Kings Road, Brentwood Essex CM14 4EF

This diagnostic tool for the 464 is a series of short programs that presumably put the inner workings of the computer to a stringent test I say presumably, my general reaction is simply one of bafflement.

There are four parts in all – part one displays a series of patterns on the screen as it interrogates the major silicon chips – *No Fault Found* was the only thing we could get it to say, which was a relief for everyone concerned.

Program 2 displays all 27 colours and sounds a note for each colour "so you can check the monitor and audio by observation" The colours were okay but the sound was awful!

AMSTRAD 64k Micro Computer
Black Blue Bright Blue Red Magenta Mauve Bright Red Purple Bright Magenta
Green Cyan Sky Blue Yellow White Pastel Blue Orange Pink Pastel Magenta
Bright Green Sea Green Bright Cyan Lime Pastel Green Pastel Cyan Bright Yellow Pastel Yellow Bright White

I decided that the music of *Sorcery* was a better test and didn't return the computer

Part three again displays patterns as a "selection of all engineering tests needed to adjust the monitor correctly" No explanation of what to look for or anything – just patterns

Part four tests the cassette by saving and reading data and also tests the keyboard – it draws a picture of every key and each one lights up

To be honest I think that if you can get *Knight Lore* or something to run it is a far more exhaustive test than the last three parts Maybe this tape would legitimise a complaint to Amstrad In the mean time I wish Amsoft would diagnose its copy writers

**Tony Keadle**


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# Software Reviews

## Sinister

**Program** *The Hollow* **Micro** Spectrum 48K **Price** £6 50 **Supplier** Gilsoft, 30 Hawthorn Road, Barry, South Glamorgan CF6 8LE

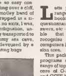
The *Hollow* is the latest adventure from the software house that produced *The Quill*

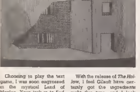
The cassette contains a text adventure on one side and a graphics representation of the game on the other

an unscrupulous magician's spell.

Each location is excellently described, and succeeds in creating an atmosphere of sinister evil, which prevails throughout the game

My quest, I soon realised, was not to be so easy one Apart from falling over a cliff, robbed by a motley band of thieves, and trapped in a silent room with no exits, I was, to my utter indignation, unceremoniously transported to a foul and slimy sea cave, where I was devoured by a host of flesh eating bugs





Choosing to play the text game, I was soon engrossed in the mystical Land of Moylen. Your task is to find ten fragments of a Magical Medallion plus The Stone of Light. By doing this you are then able to free Moylen from

With the release of *The Hollow*, I feel Gilsoft have certainly got the ingredients right this time, and I look forward to more of the same

**Roger Garrett**

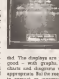
## Revision

**Program** *Mathematics* **Micro** BBC B **Price** £11 50 **Supplier** Letts Diary, Borough Road, London SE1 1DW

Letts produce a wide range of study aids – books, multiple choice questionnaires, model answers, etc – so it was inevitable that they should recognise the potential of computers in the lesson revision area.

This package is a suite of programs covering a wide range of topics in the common core of O-Level GCE, CSE and GCSE Mathematics syllabuses The approach is a mixture of demonstrations in a one-hour exam with multiple questions

Maybe I am a keyboard freak but I'd much rather revise this way than nodding over textbooks I even enjoyed trying the quizzes myself and felt inordinately proud when I worked out how much overtime the chef



did The displays are pretty good – with graphs, flowcharts and diagrams where appropriate But the response to correct or incorrect answers is to make the screen flash in different colours, which is very disturbing – I'd have been happy with a tick

It is also a little annoying to have to break out of each program in order to load and run the next one

The package does what it sets out to do quite well It will not teach you what you do not know or cannot understand but it will give you limitless practice at what you are onsare of

**Jan Watterson**

## Good fun

**Program** *3D Stunt Rider* **Micro** CPC 464 etc **Price** £8 95 **Supplier** Amsoft, Brentwood House, 169 King's Road, Brentwood, Essex

Amsoft's *3D Stunt Rider* is far from being a megagame It is technically just okay rather than breathtaking and the plot can be summed up in a handful of words – ride the motobike up a ramp and jump some buses without suffering any personal injury Despite that, or perhaps because of it, it is surprisingly good fun to play, and certainly has more immediate appeal than a lot of Amsoft's recent releases

Controls are simple and easily grasped – you have influence over the speed and to a limited extent the direction of the bike's travel. You also determine the angle of the front wheel to the ground. With skilled use of this handful of keys or the joystick you soon discover that you can make the biker fly too far and smash into the ground, spin madly out of control in mid air, drop too quickly and smash into a roof or even miss the ramp altogether

Unfortunately after just a little practice you soon discover what speed is required for a given length of jump, and how to land safely at the other end.

It may have a limited long-term appeal and will fall into the category of 'once mastered never loaded again'

**Tony Kendle**

## Unhelpful

**Program** *Shado* **Micro** Commodore 64 **Price** £14 95 **Supplier** Micro Dealer, 29 Burrowfield, Wlewyn Garden City, Herts

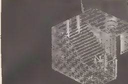
This utility enables a Commodore owner to program and run in BBC Basic and save the code on to tape for later use on a BBC micro

It seems that the authors of this software are putting all their money on the theory that because the majority of schools in the UK favour the Beeb, it's only the kids that own one at home who will benefit the most when it comes to computer homework. Now we all know that there are far more Commodore owners than BBC s in the country, so an emulator should solve that problem and make school kids lives a lot easier The theory sounds fine but in practice it doesn't quite work This emulator in itself is quite a capable program but there are a number of BBC commands that are not accepted due apparently to "hardware restrictions" I spent half an hour typing in a simple program, only to find that on running it some of the code wasn't acceptable

The authors state that all differences are fully documented, but who wants to search through pages of instructions to find them each time?

The manual supplied is poor, badly written and very unhelpful, it just doesn't explain to the user in simple terms what can and cannot be emulated Certainly there should be some sample programs included This is very important when you consider it's school kids that are expected to use this utility All-in-all a reasonable try – but definitely not user friendly

**Andy Moss**



## Fair play

**Program** *Fairlight* **Micro** Spectrum 48K **Price** £9 95 **Supplies** The Edge, 12/13 Henrietta Street, Covent Garden, London WC2E 8LH.

The Land of Fairhght had once been a beauteous place, peopled by a fair race . But the beauty had faded The Light had all but gone .

*Fairlight* it must be admitted initially resembles an Ultimate game with its overhead two colour view But while Ultimate has moved in the direction of shoot 'em ups, Swedish programming genius Bo Jagenborg has applied his Worldmaker technique to create what could be the first true adventure game in arcade form Not only do you have a mission, to free the land from darkness, you also have a convincing castle to do it in

From the depths of the dungeons to the highest tower, Castle Avars is solid, mappable real, as are the objects around it. A key weighs hardly anything so you can pocket it, a helmet is heavier, try to pick up a barrel next and you'll do yourself an injury! Similarly, kick a stool across the floor and it goes further than a table

All the adventurer's beloved problems are here, only they don't look so much like a succession of puzzles because you're free to wander and you'll probably find alternative solution's to the author's Plus there's the urgency of real time action

The other advantage over the text adventure is the wandering monsters who appear to make life a misery, from the common or garden guards to the most unhorticultural snapping snap dragons Some are fightable, others demonstrate the wisdom of that old adage about discretion being the better part of valour Some are magical and need extremely careful handling After a hard battle with a troll what better than a meal to restore your strength?

There's also a delightful loading screen with a laudable countdown and some superb three channel simulated music which is very medieval Sadly there's no other sound, not even footsteps for your stocky little hero, who reminds me of television's *Noggin the Nog*, and you don't get to hear the tune again. There's a slightly intrusive blackout between screens, though it seems less so as you get into the game and even provides a welcome breather Final quibble is that if you're on your own you fairly jog alone, owing to a less busy CPU I think this difference could have been minimised

Still none of these facts can detract from *Fairlight's* ability to capture the spirit of role playing games. It really is a spotlight onto another world.

**John Minson**

## Mixed bag

**Program** The *Epic* **Micro** Spectrum 48K **Price** £8 95 **Supplies** Turtle Software, Bridge Street Mills, Witney, Oxen OX8 6YH

If games compendium time is here again, can Christmas be far behind? Once more the selection boxes appear, equivalents of those fancy packages which contain, all too often, tatty cardboard Ludo and Snakes and Ladders games.

*The Epic* contains no reruns but all originals from, it's said, the country's top freelance programmers Strange that I don't recognise any of the names but then again with some of these games I can understand their desire for anonymity My guess is that most of these are first machine code games

So, in reverse order, here are the results It could be that my reflexes have been sapped but *Spraymania* and *Snakes Alive* were just too fast to play *Aliquid Simplex*, on the other hand, was obviously meant for older fogies than me, and once I'd romped through it I didn't feel the need to try again. Nice music though

*3D Blood Dungeon* turns out to be a shoot'em game with skill levels and a (very minor) dose of sex 'n' sadism While not *Atic Atac* it could while away an hour on a rainy day *One Man and His Job* is a multi-screen collect the objects, complete the task effort but at least there's some variety *Moons of Tantalos* is a three parter containing some reasonable animation. It's probably best of the bunch.

The loading times tell their own story, one taking a mere 38 seconds, two just over a minute, and we're not talking hyper-loads Nine pounds (almost) for six games is good value but this goes up to over two pounds each considering the unplayable nature of two of them, and only two of the remaining four would rate at budget price

**John Minson**

## Dirty rats

**Program** The *Rats* **Micro** Spectrum 48K **Price** £7 95 **Supplier** Hodder and Stoughton Software, PO Box 702, Dunton Green, Sevenoaks, Kent TN13 2YD

I once had a friend who kept rats – cute, inquisitive, intelligent creatures Hard to imagine them slowly gnawing their way through a door, leaping for the throat, ripping out great chunks of flesh. (barf, vomit!) But these are James Herbert's *Rats*, the rodents that made him gory king of British horror

Publishers Hodder have originated a distinctly odd sort of game in an attempt to fully recreate the horror and suspense of reading the Herbert novel

It's a combination of strategy and adventure sequences, which interacting as you battle to stop the tide of plague bearing super-rats that threaten London No Mickey Moose challenge, this!

You start, after a dramatic opening animation, with a map of the capital, allocating resources and reading reports Suddenly a warning bell and you're into an adventure sequence There's a varying variety of these, you may be an old shopkeeper investigating a rustling sound, or later one of the tree main characters whose survival is imperative for success

All this is joystick controlled not quite icons but a simple selection technique, with commands that are chosen word by word in real time In another window information scrolls, and as your heartbeat increases the rats begin to gnaw through this panel It's all surprisingly effective

Where the game falls down is in its multi-stage load and rather inexpert documentation, it took me ages to realise that not all the blocks load every time.

It takes some getting into, but it can be quite creepy Play in the dead of night for full effect

**John Minson**

# Death Wall

**A game of concentration and skill on the BBC and Electron machines by Mark Gidley**

Your task is to land your helicopter on the Death Wall while avoiding the Imperial Mines, which if touched prove fatal! Sounds easy? Well, a time limit is also involved, depending on which of the ten levels you start.

If you do manage to land on the wall, you go onto a harder level, with a greater amount of bombs, and a shorter time limit.

The listing comes as two parts, the first containing the instructions – and it automatically loads the second part, which should be saved on tape directly after the first part. It does run on the Electron – but Mode 7 looks a bit odd. The program also runs perfectly on a disc system with Page set to &1900.



```
   10REM   Death Wall'
   20REM  by M. Gidley
   30REM       1985
   40:
   50MODE7:VDU23;8202;0;0;0;
   60*TV255
   70PROCdefine
   80PROCtitle
   90CHAIN"Death2"
  100END
  110:
  120DEFPROCdefine
  130FORI=297 TO302:READA,B,C,D,E,F,G,H:VDU23,I,A,B,C,D,E,F,G,H:NEXT
  140:
  150DATA 24,60,102,219,102,60,24,0,0,252,48,0,0,0,0,0,0,0,0,120,253,255,112,136,0,126,126,126,126,126,126,0,0,231,231,231,231,231,231,0,255,255,255,255,255,255,255,255
  160:
  170ENVELOPE1,3,-17,61,9,4,0,0,126,0,0,-126,126,126
  180ENVELOPE2,1,20,-15,-15,6,3,3,127,0,-2,-2,126,126
  190ENVELOPE3,1,-15,-15,-15,230,230,255,30,5,0,-10,126,126
  200ENVELOPE4,3,-5,-2,-1,10,15,255,0,0,0,0,0,0
  210ENVELOPE5,3,0,0,0,0,255,0,127,0,0,-127,126,126
  220ENDPROC
  230:
  240DEFPROCtitle
  250A$=CHR$130
  260FORI=3TOA:PRINTTAB(10,I);CHR$141CHR$135CHR$157CHR$132;"Death Wall  ";CHR$156:NEXTI
  270PRINT'A$;" The object of the game is to land on  ";CHR$129;"'Death Wall'";A$;" and blow it up '"
  280PRINT A$;" To achieve this, you must land on the ";A$;"yellow block in the wall which is safe ";A$;"from a high degree of electricity which";A$;"flows through the rest of the wall."
  290PRINT A$;" When you land on the wall the bomb is ";A$;"automatically set and you go onto a    ";A$;"harder level. As the level get harder  ";A$;",your time limit decreases steadily."
  300PRINT'A$;" To";CHR$134;"Thrust";A$;"use:";CHR$134;"<RETURN>"
  310PRINTTAB(3,23);CHR$129;"Press <SPACE> to read next page":REPEATUNTILGET=32
  320CLS:FORI=3TO4:PRINTTAB(10,I);CHR$141CHR$135CHR$157CHR$132;"Death Wall  ";CHR$156:NEXTI
  330PRINT'CHR$134;"HAZARDS"'" _______"
  340PRINT'A$;" Floating in the sky are";CHR$131;"Imperial Bombs";A$;"which will blow up anything which makes";A$;"contact with it !"
  350PRINT'A$;" Their numbers increase by one after   ";A$;"every level completed."
  360PRINT'CHR$134;"Other Keys"'" _____ ____"
  370PRINT'A$;" S";CHR$131;"...";A$;"Sound On";SPC5;"Q";CHR$131;"...";A$;"Sound Off"
  380PRINTA$;" P";CHR$131;"...";A$;"Pause Game";SPC3;"A";CHR$131;"...";A$;"Resume Game"
  390VDU26,10,24,27,22
  400ENDPROC
```

```
10REM 'Death Wall'
20REM    Part 2
30 REM SAVE AS "DEATH2"
40VDU28,0,24,29,0
50HI%=100:name$="Mark Gidley"
60ON ERROR GOTO1420
70PROCinit
71PROCtune:PRINTTAB(3,33);CHR$134;"Press";CHR$1
38;" SPACEBAR'";CHR$137;"to continue":REPEATUNTILG
ET=32
80PROCask
90MODE2:PROCd
100PROCscreen:VDU5:TIME=0
110IFINKEY-74B%=B%+12
120IFINKEY-82THEN*FX210,0
130IFINKEY-17THEN*FX210,1
140IFINKEY-56THENMOVEA%,B%:GCOL0,1:PRINT"+":GCOL
0,3:MOVEA%,B%:PRINT"*":REPEATUNTILGET=32
150a%=A%:b%=B%
160GCOL0,1:MOVEA%,B%:PRINT"+":GCOL0,3:MOVEA%,B%:
PRINT"*"
170B%=B%-5:A%=A%-15
180IFB%>900B%=900
190IFTIME>timePROCcrash
200IFB%<415PROCcheck
210IFout=TRUEGOTO1410
220IFA%<30THENA%=1200
230IFdone=TRUETHENGOTO1180
240IFPOINT(A%+33,B%-31)ORPOINT(A%,B%-31)ORPOINT(
A%,B%)ORPOINT(A%+38,B%)=7THENPROCcrash
250GCOL0,0:MOVEa%,b%:PRINT"+":MOVEa%,b%:PRINT"*"
:GCOL3,1
260GOTO110
270:
280DEFPROCinit
290SC=0:time=2000
300S=10:SD=1
310done=FALSE:completed=FALSE:LV%=3
320out=FALSE
330time=2000
340ENDPROC
350:
360DEFPROCbricks(start,step,Y)
370COLOUR1:COLOUR135
380PRINTTAB(start,Y);STRING$(step,CHR$300)
390PRINTTAB(start,Y+1);STRING$(step,CHR$30)
400ENDPROC
410:
420DEFPROCscreen
430PROCbricks(0,19,27)
440PROCbricks(0,3,30)
450PROCbricks(16,3,20)
460PROCriver(0,1210,250,163)
470PROCheader
480COLOUR1:COLOUR135:PRINTTAB(3,20);STRING$(8,"-
")
490PRINTTAB(10,30);STRING$(8,"-")
500COLOUR3:PRINTTAB(9,20);CHR$302
510COLOUR11:COLOUR128:PRINTTAB(8,21);"| |"
520COLOUR12:PRINTTAB(8,22);"| |"
530COLOUR11:PRINTTAB(8,32);"| |"
540PROClives
550COLOUR7:FORI=1TOLVL:PRINTTAB(RND(19),RND(8)+6
);"|":NEXT
560A%=RND(1180):B%=900
570ENDPROC
580:
590DEFPROCheader:VDU5
600GCOL0,2:MOVE339,1020:PRINT;"DEATH WALL":MOVE3
44,1019:GCOL0,1:PRINT;"DEATH WALL":VDU4:COLOUR128
610COLOUR3:PRINTTAB(0,1);"Score";TAB(8,1);"Hi Sc
ore";TAB(16,1);"Lvl"
620COLOUR7:PRINTTAB(0,2);SC:COLOUR9:PRINTTAB(8,2
);HI%:COLOUR7:PRINTTAB(17,2);LVL
630ENDPROC
640:
650DEFPROCriver(A,B,C,D)
660GCOL0,6
670MOVEA,B:MOVE5,C:PLOT85,A,C
680MOVEA,C:MOVEA,D:PLOT85,D,D
690ENDPROC
700:
710DEFPROCcheck
720IFA%<550ORA%>590PROCcrash:ENDPROC
730PROCdone:done=TRUE
740ENDPROC
750:
760DEFPROCask
800CLS
810PROCtitle
820PRINTTAB(7,10)CHR$131;"Input difficulty level
"
830PRINTTAB(10,11)CHR$131;"(1-easy  10-Hard)"
840PRINTTAB(5,14);CHR$135CHR$157CHR$132;"Enter c
hoice:        ";CHR$136:INPUTTAB(21,14)LVL
850IF LVL<1 OR LVL>10 THEN VDU7:GOTO840
860ENDPROC
870:
880DEFPROCd:VDU23;8202;0;0;0;:ENDPROC
890:
900DEFPROCtitle
910FORA=0TO1:PRINTTAB(12)CHR$141CHR$131"DEATH WA
LL":NEXTA
920PRINTTAB(13,2);CHR$148;"''''' '''''"
930ENDPROC
940:
950DEFPROCdone
960SOUND&11,0,0,0:SOUND1,3,1,38
970COLOUR7
980A=time:A=A-TIME:SC=SC+A
990ENDPROC
1000:
1010DEFPROCcrash
1020SOUND&11,4,250,250:SOUND&10,-15,7,20:LV%=LV%-
1
1030FORI=0TO10:GCOL0,9:MOVEA%+10,B%-30:DRAWA%+RND
(300),B%+RND(200):NEXT
1040FORI=0TO10:MOVEA%+10,B%-20:DRAWA%-RND(300),B%
+RND(300):NEXT
1050VDU4:PROClives:VDU5:FORI=0TO4000:NEXT
1060A%=RND(1280):B%=900:TIME=0
1070VDU4:CLS:PROCscreen:VDU5
1080ENDPROC
1090:
1100DEFPROClives
1110COLOUR7:PRINTTAB(0,30)"lives:";LV%
1120IFLV%<1THENout=TRUE
1130ENDPROC
1140:
1150FORI=0TO2000:NEXTI
1160FORI=0TO6000:NEXT:MODE7:PROCd:PROCcongrat
1170done=FALSE:TIME=0:time=time-100:GOTO90
1180END
1190:
1200DEFPROCcongrat
1210PROCtitle
1220FORI=10TO11:PRINTTAB(6,I)CHR$141CHR$132CHR$15
7CHR$131;"CONGRATULATIONS  "CHR$128:NEXTI
1230PRINT''SPC5"You've completed stage ";LVL
1240PRINT''SPC5"and blown up 'Death Wall'"
1250PRINT''" That's an extra 200 bonus points'"
1260SC=SC+200
1270PRINT'SPC(12);"Score=";SC
1280PRINT''SPC(12);" Lives=";LV%
1290LVL=LVL+1
1300FORI=0TO1000:NEXTI:FORI=3TO4:PRINTTAB(5,I);CH
R$141CHR$134CHR$128;"Now it gets harder !":NEXT
1310FORI=0TO3000:NEXTI
1320PRINTTAB(7,32);CHR$135CHR$128"Ready for stage
";LVL
1330SOUND1,2,10,10
1340FORI=0TO4000:NEXTI:ENDPROC
1350:
1360DEFPROCtune
1370RESTORE1380:FORloop=1TO7:READA,B,C:SOUND1,-A,
B,C:NEXT
1380DATA 15,101,4,15,81,1,3,0,6,7,15,81,1,3,0,6,.
7,15,89,4,15,81,4
1390ENDPROC
1400:
1410SOUND&11,0,0,0:FORI=870TO0STEP-12:SOUND1,-15,
I,1:NEXTI
1420FORI=0TO1000:NEXTI:MODE7:PROCd
1430IFSC>HI%PROCenter:GOTO1480
1440CLS:FORJ=0TO1:PRINTTAB(5,J)CHR$141CHR$145CHR$
157CHR$131;"Death Wall Hi-Score  ";CHR$156:NEXTJ
1450FORJ=3TO4:PRINTTAB(9,J)CHR$141CHR$130"Todays
Greatest":NEXTJ
1460FORI=6TO7:PRINTTAB(4,I);CHR$141CHR$131;"Scor
e  ";CHR$135CHR$157CHR$132;SC;"  ";CHR$156
1470NEXT
1480FORI=9TO10:PRINTTAB(1,I);CHR$141CHR$131;"Hi-S
core : ";CHR$135CHR$157CHR$132;HI%;"  ";CHR$156
1490NEXT
1500FORI=14TO15:PRINTTAB(0,I);CHR$141CHR$129CHR$1
57CHR$131;"RECORD HOLDER  ";CHR$156:NEXT
1510PRINT:FORI=17TO18:PRINTTAB(17-(LEN(name$)/2))
;CHR$141;CHR$128;name$:NEXT
1520FORI=20TO21:PRINTTAB(0,I);CHR$141CHR$129CHR$1
57CHR$131;"RECORD HOLDER  ";CHR$156:NEXT
1530PRINTTAB(3,32);CHR$131;"Press";CHR$128;"'SPAC
EBAR'";CHR$137;"for another game":REPEATUNTILGET=3
2
1540PROCinit:GOTO80
1550:
1560DEFPROCenter
1570CLS:PROCtitle
1580*FX15,0
1590FORK=5TO6:PRINTTAB(6,K)CHR$141CHR$129CHR$157C
HR$131;"CONGRATULATIONS  ";CHR$156:NEXTK
1600INPUTTAB(5,9)"Please enter your name" name$
1610K=LEN(name$)
1620IFK>21VDU7:GOTO1570
1630HI%=SC
1640ENDPROC
```

# Make a note of it

*An invaluable aid to your programming – an on-screen notepad by* ***Iain Scott***

Pad is an extension to Superbasic which should prove particularly useful when writing lengthy programs. It allows short notes to be made, and easily recalled whenever required.

Frequently programmers have to refer to earlier parts of a program, normally a time consuming exercise, because one has to single step through the program to find the line, or leave the editor, guess roughly where the line was, re-enter the editor and single step from here (unless using a proper editor). The note pad allows line numbers, variable names, and anything else you want, to be found readily.

First of all the program below will create a file called *Pad_asm* on microdrive one. To subsequently run this program use the following procedure

*a= Respr (9486) LBytes mdv1_PAD_asm, a Call a*

Now the pad may be called up by typing *Pad*. When the pad appears it does not destroy the current screen picture and when you leave the pad the original picture will be restored.

The program up to the Data statements simply *Pokes* the data into the memory reserved for it, checking that the last number on each line is always the sum of all the other numbers. It then calls any special routines that are required.

In the present case a screen image (of the pad) has to be stored in memory. To reduce the size of the code, and the amount of typing, the following approach has been adopted: firstly the screen is set up from Basic, after this the code is called. The first eight bytes call a routine to switch the current display with the random bytes above the code. Thus the required screen image has now been included in the area reserved, without the need to type in masses of data.

The next stage is to save the code above the first eight bytes, along with the image, to a cartridge assumed to be in mdv1_. After this, to use the pad simply follow the procedure outlined above. Note that when dealing with machine code it is easy to crash the machine, and this sometimes causes the microdrives to spin. Be warned, *always* save machine code programs before running them, *preferably* make a backup copy, and *always* remove all cartridges before calling a machine code routine.

When you call the pad you will notice that it displays the memory usage. It shows the amount of memory taken up by the resident procedure area (*RPA*), the transient program area (*TPA*), Superbasic (*SBA*), and the free memory or filing subsystem slave blocks area (*FSA*). The first three figures are all rounded off to the nearest kilobyte, but the free memory is simply truncated. Thus the free memory shown is always the absolute minimum available (this also accounts for the fact that the figures might not add exactly to the total amount of memory installed).

When using the pad, three commands will be recognised. These are '*?c*' to clear the pad, '*?e*' to escape from the pad, '*?t*' to move to the top of the pad. The commands must be typed on a line by themselves, ie. press *enter* to move to a new line and then type the command.

The *?t* command allows a very crude form of editing. By moving to the top of the pad the enter key can be used to move down to any line, and then this may be overwritten. Since this is only a note pad there should not be too much wasted effort in overwriting lines. Lastly it should perhaps be pointed out that the line currently being entered can be edited in the usual way.

```
100 REMark *** Basic loader programme for note pad extension **
110 CLEAR:CLS
120 addr=RESPR(9497):location=addr:e=0
130 REPeat put_words
140  sum=0
150  FOR word_no=1 TO 8
160   READ word
170   sum=sum+word
180   POKE_W location,word
190   location=location+2
200   IF EOF THEN e=1:EXIT word_no
210  END FOR word_no
220  IF e=1 THEN check=word:sum=sum-word:ELSE READ check
230  IF check <> sum THEN
240   CLS#0:FLASH#0,1
250   PRINT#0,'ERROR: line 'INT((location-addr)/16)*10+990' contains bad data.'
260   FLASH#0,0
270   STOP
280  END IF
290  IF e=1 THEN EXIT put_words
300 END REPeat put_words
310 code_specific
320 STOP
1000 DATA 24832,224,16960,20005,17402,52,13432,272,93259
1010 DATA 20114,24832,206,17402,398,13432,198,20114,96696
1020 DATA 17402,420,3040,17402,398,13432,200,20114,78212
1030 DATA 17402,416,3040,24832,170,16960,20005,1,88706
1040 DATA 12,848,16730,0,0,0,29180,29696,76450
1050 DATA 8314,384,20712,20035,24832,136,17914,376,120708
1060 DATA 8761,2,32808,9401,2,32796,9593,2,93357
1070 DATA 32780,4,9503,2,32780,8,9593,2,84774
1080 DATA 32780,12,24699,9746,37507,57401,50505,25606,291336
1090 DATA 19074,26370,21057,9404,8707,20938,65314,10300,181369
1100 DATA 0,3,18938,200,19450,320,8720,29700,77451
1110 DATA 13884,65535,28679,20035,8733,13432,206,20114,170618
1120 DATA 4630,75,28677,20035,19012,28378,28690,20035,147570
1130 DATA 55804,0,4,20940,65492,24920,24836,16960,208956
1140 DATA 20005,3828,2,2364,17914,300,30744,28673,108890
1150 DATA 29193,9220,13841,13010,13507,20938,65520,19008,184245
1160 DATA 27394,21641,34268,0,76,20937,65510,19008,208834
1170 DATA 26382,27422,29193,8828,2,23206,20936,65492,201481
1180 DATA 30745,3828,2,3622,8764,0,152,17984,70897
1190 DATA 24768,20005,8314,152,13372,48,17402,168,84309
1200 DATA 29674,20035,3137,3,28398,12850,150,57433,150692
1210 DATA 3073,63,26338,57417,3073,67,26400,3073,119364
1220 DATA 99,26384,3073,69,26394,3073,101,26388,95591
1230 DATA 3075,84,26402,3073,116,26396,24762,20704,112610
1240 DATA 20035,24756,29184,28689,20035,28707,20035,8314,179755
1250 DATA 10,28704,20035,20005,28707,20035,29184,29696,176512
1260 DATA 28368,20035,24722,1793,1026,200,112,160,76736
1270 DATA 69,0,4,196,48,162,29,21072,21572
1280 DATA 16672,21504,16672,21314,16672,18003,16672,127989
5000 DEFine PROCedure code_specific
5010  OPEN#3,scr_200x163a152x28
5020  PAPER#3,0:CLS#3
5030  WINDOW#3,200,52,140,18
5040  INK#3,7:BORDER#3,1,7:CLS#3:PRINT#3,'   NOTE  PAD
5050  CLOSE#3
5060  CLS#0:FLASH#0,1
5070  PRINT#0,'Remove cartridge NOW'
5080  FLASH#0,0:PAUSE 200
5090  CALL Addr
5100  CLS
5110  PRINT#0,'OK, reinsert the cartridge and'
5120  PRINT#0,'press any key.'
5130  t$=INKEY$(#0,-1)
5140  SBYTES mdv1_PAD_asm,Addr+8,9486
5150 END DEFine code_specific
```

# Taking a chance

*Budding Uri Gellers start here on the Amstrad machines – written by **Jon Tarrant***

*Prediction* is a game of pure chance or is it? Perhaps it may indicate how successful you are at predicting, rather than just guessing, a number sequence It might even indicate a latent psychic ability you never knew you had!

The game is loosely based on the Rhine card principle used to test psychic ability In the Rhine test the object is to 'guess' the picture on one of five different cards being examined by a second participant; in this game the computer is that second participant You are invited to predict what will be the next random number, in the range one to five, that the computer will generate In order to avoid the inevitable fixed sequence of numbers that are generated simply by calling *Rnd(1)*, the sequence is re-seeded with the clock value before each number generation (To demonstrate the constancy of the Amstrad's random number sequences under normal conditions, reset the computer, then enter *Print Rnd(1)* a few times and note the numbers obtained, reset the computer again and repeat the operation comparing the numbers generated with those obtained the first time ) Line 630 is used to ensure a disrupted string of random numbers in the range one to five

A final touch to avoid cheating is to disable the break key This is done in Line 160 by removing the Rem keyword, but it is as well to do this only after having fully debugged the program

One interesting part of the screen handling routine is the use of transparent printing and changing *Ink* colours to make the printing visible or hidden as appropriate Within each run of ten guesses, defined by the *For Next* loop between Lines 530 and 690, the computer generated random number is printed over a coloured square using the same ink colour as that of the square. The control codes in Lines 650 and 670 enable and disable the transparent printing mode, while the *Ink* changes in Line 730 makes visible the computer generated sequence that has already been printed

At the end of the game, the total number of correct predictions made is displayed together with the figure expected by pure chance

```
100 REM ****************************
110 REM *****     PREDICTION     *****
120 REM *****         BY         *****
130 REM *****    JON TARRANT     *****
140 REM ****************************
150 :
160 REM KEY DEF 66,1,46,46,46
170 MODE 1:PAPER #0,0:BORDER 14:PEN 1
180 INK 0,0:INK 1,14:INK 2,24
190 REM  *** INK NUMBER 3 IS VARIABLE; E
ITHER (INK 1) OR (INK 2) ***
200 WINDOW #1,2,40,14,25
210 FOR P=1 TO 25
220  LOCATE 1,P:PRINT CHR$(143);
230 NEXT P
240 LOCATE 13,2:PRINT "   PREDICTION   "
;PEN 2
250 LOCATE 16,3
260 FOR P=1 TO 10
270  PRINT CHR$(208);
280 NEXT P
290 FOR N=1 TO 2
300  LET C1=150:C2=154:C3=156
310  FOR NN= 1 TO 3
320   IF NN=3 THEN C1=147:C2=154:C3=153
330   LOCATE 2,(6+NN)+(N-1)*4
340   FOR NNN=1 TO 10
350    PRINT CHR$(C1);CHR$(C2);CHR$(C3);
360    IF NNN<>10 THEN PRINT "  ";
370   NEXT NNN
380   LET C1=149:C2=143-(N-1)*111:C3=149
390  NEXT NN
400 NEXT N
420 LET RN=0
430 WHILE (STAT$<>"Q" AND STAT$<>"q")
440  PEN 2
450  FOR N=0 TO 9
460   LOCATE 3+N*4,8:PRINT CHR$(143)
470   LOCATE 3+N*4,12:PRINT CHR$(32)
480  NEXT N
490  CLS #1:INK 3,24:PEN 1
500  LET RN=RN+1
510  LOCATE 3,5:PRINT "RUN NUMBER: ";RN
520  NRIGHT=0
530  FOR N=0 TO 9
540   LOCATE 3+N*4,12:PRINT CHR$(210)
550   LOCATE 4,17:PRINT "ENTER YOUR PRED
ICTION OF";STR$(N+1);
560   IF N=0 THEN PRINT "st"; ELSE IF N=
1 THEN PRINT "nd"; ELSE IF N=2 THEN PRIN
T "rd"; ELSE PRINT "th";
570   PRINT " DIGIT"
580   LOCATE 8,18:PRINT "SELECT FROM NUM
BERS 1 TO 5";
590   LET IN$=""
600   WHILE (IN$="" OR IN$>"5" OR IN$<"1
")
610    LET IN$=INKEY$
620   WEND
630   RANDOMIZE TIME:LET CR=INT(5*RND(1)
)+1
640   LOCATE 3+N*4,12:PRINT IN$
650   PRINT CHR$(22)+CHR$(1)
660   PEN 3:LOCATE 2+N*4,8:PRINT CR:PEN
1
670   PRINT CHR$(22)+CHR$(0)
680   IF VAL(IN$)=CR THEN NRIGHT=NRIGHT+
1
690  NEXT N
700  :
710  CLS #1
720  LOCATE 5,15:PRINT "  RUN NUMBER";RN
;"NOW COMPLETE   "
730  INK 3,14
740  LOCATE 5,16:PRINT "YOU GOT";NRIGHT;
"CORRECT: AVERAGE IS 2";PEN 2
750  LET TOTRIGHT=TOTRIGHT+NRIGHT:EXPECT
ED=EXPECTED+2
760  LOCATE 8,21:PRINT "TOTAL CORRECT GU
ESSES:";TOTRIGHT
770  LOCATE 6,23:PRINT "EXPECTED NUMBER
CORRECT.";EXPECTED
780  LOCATE 5,18:PRINT "         TYPE Q
TO END         "
790  LOCATE 5,19:PRINT "PRESS ANY OTHER
KEY TO CONTINUE":PEN 1
800  LET STAT$=""
810  WHILE STAT$=""
820   LET STAT$=INKEY$
830  WEND
840 WEND
850 :
860 CLS
870 LOCATE 14,5:PEN 2:PRINT "END OF GAME
":PEN 1
880 LOCATE 5,10:PRINT "YOU CORRECTLY GUE
SSED ";:PEN 2:PRINT TOTRIGHT;:PEN 1:PRINT
 "DIGITS"
890 LOCATE 3,12:PRINT "TOTAL EXPECTED BY
 CHANCE:";:PEN 2:PRINT EXPECTED;:PEN 1:P
RINT "DIGITS
900 LOCATE 4,20:PEN 2:PRINT "THANK YOU F
OR PLAYING PREDICTION"
910 CALL &BB18
920 CLS
930 END
```

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# Leaf it out

*A computer art program for Spectrum owners written by **John da Rivaz***

On the edge of the desert of Dessicos grow huge trees Their shape is sculpted by wind and other climactic factors Each time the program is run a different tree is shown

**Theory**

In *New Scientist* of 4 April, an article appeared on the subject of fractals. These are shapes that repeat themselves at many different sizes For example, a coastline has smaller bays and promontories that cannot be seen at a distance, but as you approach they are seen to have a similar shape as the large features

This program was written on the Sinclair Spectrum to produce fractal trees. There are variables for wind and climate which control the angle and lengths of branches To produce a perfectly regular tree one can set these to zero In addition other variables can be altered to set up the initial conditions to specify different shapes of tree

The program basically draws a trunk and then two branches from it. From the ends of these branches it draws two more until all the memory is filled with the starting points for branches

In order to provide for as complex a tree as possible, branch conditions are stored as pokes in Ram, and once drawn details of a branch are deleted. This makes the program more complicated, as machine code has to be used to delete the data poked into Ram. Using the Spectrum's string handling took up too much memory *A Ldir* had to be used to delete the used branch as opposed to a *for/next* loop with *peeks* and *pokes*, because the latter would have taken too long to execute

I include detailed program notes, as this program could be heavily hacked by people interested in using the principle to make other drawings This approach to computer art enables people, like me, who can't draw, to produce pictures using computational power as opposed to merely composing a picture by setting bits in screen Ram.

**Program notes**

| Line No | |
|---|---|
| 10-110 | Set up the machine code and memory |
| 30 | Sees whether program has been run before and if so does not attempt to read Ramtop again |
| 40 | Stores Ramtop in printer buffer |
| 60 | Clears space for storing data |
| 70 | Initialises end and start of data area and end point of actual data. *Fct* is the variable indicating the number of branches It is set at 0 5 because it is doubled at the start of the main loop |
| 80-100 | Read in machine code It switches off interrupts and loads registers for the *Ldir* The actual numbers for the registers are poked in by Basic to make it easier to alter the amount of memory space when modifying the program See Rem Line 50 |
| 110 | Pokes in the numbers for the registers |
| 120-150 | Makes a blue sky and sandy backdrop for the tree As green leaves can be printed, a green backdrop would be inappropriate |
| 160-290 | Set up input variables |
| 330-610 | Main loop |
| 360 | If all the memory is used up *f$* is a space not the null string, and the fractal counter doesn't increase and all the remaining data is used up |
| 370 | Inputs the random factors and also the shape reduction factors *rf* and *wf*. The wind and climate are printed *#1* not *£1*, ie, on the lower part of the screen. |

Wind -17 Climate -2
Number of start points 8192

```
  10 REM set up memory & m code
  20 REM
  30 IF PEEK 23296>0 OR PEEK 232
97>0 THEN GO TO 60
  40 POKE 23296,PEEK 23730: POKE
 23297,PEEK 23731
  50 REM To increase BASIC's
space increase CLEAR number and
make st = 1 + this number.
  60 CLEAR 28000
  70 LET e=PEEK 23296+256*PEEK 2
3297: LET st=28001: LET ep=st+3:
 LET fct=.5: LET f$=""
  80 DATA 243,17,0,0,33,0,0,1,0,
0,237,176,251,201
  90 LET test=0: LET shift=23298
: FOR f=shift TO 23311: READ f1:
 LET test=test+f1: POKE f,f1: NE
XT f
 100 IF test<>1159 THEN PRINT "
 DATA ERROR ": STOP
 110 LET DE2=st/256: LET DE1=256
*(DE2-INT DE2): POKE SHIFT+2,DE1
: POKE SHIFT+3,DE2: LET HL1=DE1+
3: POKE SHIFT+5,HL1: POKE SHIFT+
6,DE2
```

```
 120 REM set up screen
 130 REM
 140 LET s$=" ": FOR f=1 TO 5: L
ET s$=s$+s$: NEXT f: PRINT LEN s
$
 150 CLS : PAPER 5: FOR f=0 TO 5
: PRINT s$: NEXT f: PAPER 6: FOR
 f=6 TO 21: PRINT s$;: NEXT f
 160 REM set up variables
 170 REM
 180 LET length=30
 190 LET width=30
 200 LET wf=.5: REM widthfractio
n
 210 LET wind=10
 220 LET climate=10
 230 LET anginc=10
 240 LET rf=.85
 250 RANDOMIZE
 260 REM tree start location
 270 REM -------------------
 280 POKE st,120: POKE st+1,0: P
OKE st+2,45: REM x,y,angle/2
 290:
 300 REM      Fractal  Tree
  by J. de Rivaz   April 1985
 310:
 320 REM main loop
 330 REM
 340 REM set fractal parameters
 350 REM ----------------------
 360 IF f$="" THEN  LET fct=fct*
2
 370 LET w=wind/2-wind*RND: LET
c=climate/2-climate*RND: LET len
gth=length*rf+c: LET width=width
*rf*wf: PRINT £1;AT 0,0;"Wind
 ";INT (w*10);"  ","Climate ";IN
T (c*10);"  ","Number of start
points ";fct;
 380 FOR f=0 TO fct
 390 REM draw branch
 400 REM
 410 LET ang=PI*(PEEK (st+2))/90
: LET c=COS ang: LET s=SIN ang
 420 LET xs=PEEK st: LET ys=PEEK
 (st+1): INK 0: IF length<2 THEN
  INK 4
```

| | |
|---|---|
| 380 | Each set has "fct" branches, and this loop draws each one and creates the parameters for the next generation. |
| 380-470 | This draws a branch, rejecting any which would go off screen. Such branches do not produce others, and are deleted undrawn. |
| 420 | This line draws lengths less than two in green, so that they may appear as leaves. Alternatively, it could be replaced with a line that draws everything with fct greater than a certain number in green. |
| 480-610 | This section creates the parameters for new branches |
| 500 | Tests to see whether the space is used up and skips section if it has |
| 620 | Subroutine to delete branch. Imagine all the data in memory stretching from st to ep, where ep>sp. All one needs to do is to load st with st.3 and so on to ep. This can easily be done in Basic, unfortunately this is quick to write but slow in execution. |
| 670 | In the machine code section, the length of the block to be moved is required and this is poked |
| 9020 | Microdrive save routine |

```
 430 FOR i=0 TO width: FOR j=0 T
O width
 440 LET px=xs+i: LET py=ys+j
 450 LET dx=px+length*c: LET dy=
py+length*s: IF dx<0 OR dx>255 O
R dy<0 OR dy>175 THEN  GO SUB 64
0: LET sp=sp-3: GO TO 600
 460 PLOT px,py: DRAW length*c,l
ength*s
 470 NEXT j: NEXT i
 480 REM create new parameters
 490 REM
 500 IF f$=" " THEN  GO TO 590:
REM no more space for new fracta
ls
 510 LET fi=width-width*wf*rf: L
ET xs=xs+length*c: LET ys=ys+len
gth*s: LET xi=xs+fi*s: LET yi=ys
+fi*c
 520 LET angi=PEEK (st+2)+anginc
*w
 530 IF angi<0 THEN  LET angi=an
gi+180: GO TO 530
 540 IF angi>=180 THEN  LET ang1
=ang1-180: GO TO 540
 550 LET ang2=PEEK (st+2)-anginc
*w
 560 IF ang2<0 THEN  LET ang2=an
g2+180: GO TO 540
 570 IF ang2>=180 TNEN  LET ang2
=ang2-180: GO TO 570
 580 POKE ep,xs: POKE ep+1,ys: P
OKE ep+2,ang1: POKE ep+3,x1: POK
E ep+4,y1: POKE ep+5,ang2: LET e
p=ep+6: IF ep>(e-5) THEN  LET f$
=" "
 590 GO SUB 640
 600 NEXT f
 610 GO TO 360
 620 REM sub. to delete branch
 630 REM
 640 REM  FOR q=st TO ep-3: POKE
 q,PEEK (q+3): NEXT q : REM BASI
C equiv of mc code
 650 REM mc code
 660 LET BC=ep-st-3
 670 LET BC2=BC/256: LET BC1=256
*(BC2-INT BC2): POKE 23306,BC1:
POKE 23307,BC2
 680 LET de=USR shift
 690 REM mc code end
 700 IF ep-4<=st THEN  PRINT £1;
AT 0,0;"Program finnished: final
 number of branches = ";fct: PAU
SE 0: STOP
 710 LET ep=ep-3: RETURN
9000 STOP
9020 CLEAR st+500: ERASE "m";1;"
tree": SAVE *"m";1;"tree": VERIF
Y *"m";1;"tree"
```

# Demand a recount

*A machine code hex conversion routine for the 64 – assembled for you by* ***Mike Hart***

For years, I have wondered whether or not it was possible to add a simple hex-conversion routine to my C-64 to enable it to enter data in the form of hex bytes rather than decimal values. As I have never seen a routine published, I decided to write one myself and *Hex-Aid* is the result. As a by-product, it is also possible to use it as a hexadecimal calculator in direct mode.

Full instructions are given in the listing provided. The routine tucks itself into *$02BC-$02E3* and is only 40 bytes long as I have tried to keep it as compact as possible. It is, however, completely relocatable.

*Hex-Aid* is able to use the fact that when a string is read or entered in direct mode its length is contained in (zero-page) *$19* and the pointer to its location in memory in *$1A* and *$1B*. The program utilises this fact to get each individual character of the string and then do a conversion process leaving the result each time in the Floating Point Accumulator No One. When there are no more string characters to be processed, *Hex-Aid* uses a Rom routine which has the effect of leaving the low/high bytes in the *Y* and *A* registers where they may be recovered by a *Peek(782)* for a single byte value or a *Peek(782)+256*Peek(780)* for a double byte value. In the case of the disassembly, I had to ensure that the string length was only two as otherwise the disassembly mnemonic gets tagged on to the tail of the data item generating errors (see Line 410).

As you can see from the listing (Lines 30-104) I have had to put *Hex Aid* in the form of a decimal loader. Once in position, though, this can itself act as a loader and, as an illustration, notice lines 200-304 which reads in the hex values of the program itself and then deposits in the cassette buffer. Lines 400-1016 just demonstrate that it is quite possible to have a fully documented disassembler listing which is not only intelligible to the reader (if you understand 6502 code), but is also capable of being read from within a Basic program.

If you are a machine language programmer you might like to study some of the 'short cuts' which I discovered in the construction process!

```
1 REM        *** HEX-AID ***
2 :
3 REM        ** MIKE HART **
4 :
5 REM SYNTAX AS FOLLOWS:
6 :
7 :
10 REM A$="XXXX":SYS(LN)
11 REM  (NOTE "XX.." IS 1-4 DIGIT HEX NO.)
12 REM  (NOTE LN BEING LOCATION OF CODE)
13 REM  (NOTE A$ CAN BE ANY STRING VARIABLE)
14 :
15 REM DECIMAL=PEEK(782)+256*PEEK(780)
16 REM  (NOTE..PEEK(780) FOR SINGLE BYTE)
17 :
18 REM TRY THIS IN DIRECT MODE:-
19 REM A$="A5B5":SYS700:?PEEK(782)+256*PEEK(780)
20 REM SHOULD GIVE  .. 42421
21 :
30 LN=700
40 FOR J=LN TO LN+39:READ X:POKEJ,X:NEXT
50 :
60 :
100 DATA 32,247,184,133,2,32,12,188
101 DATA 160,16,32,162,179,32,43,186
102 DATA 164,2,177,26,201,65,144,2
103 DATA 233,8,233,47,32,126,189,230
104 DATA 2,198,25,208,224,76,247,183
105 :
106 :
107 :
200 LN=700
210 FOR J=LN TO LN+39:READ X$
220 SYS 700:POKE J,PEEK(780):NEXT
230 :
240 :
300 DATA 20,F7,B8,85,02,20,0C,BC
301 DATA A0,10,20,A2,B3,20,2B,BA
302 DATA A4,02,B1,1A,C9,41,90,02
303 DATA E9,08,E9,2F,20,7E,BD,E6
304 DATA 02,C6,19,D0,E0,4C,F7,B7
305 :
306 :
400 LN=700
410 FOR J=LN TO LN+39:READ X$:POKE 25,2
420 SYS 700:POKE J,PEEK(780):NEXT:END
430 :
440 REM NOTE POKE 25,2 IN LINE 410
450 REM RESTRICTS STRING LENGTH TO 2
460 REM AND IS ESSENTIAL IN A
470 REM DISASSEMBLY LIKE THIS...
480 :
490 REM TO AVOID ERRORS YOU ALSO NEED TO
500 REM PUT A COLON JUST BEFORE THE
510 REM OP-CODE AND NOT NEGLECT THE
520 REM 'END' IN LINE 420....
```

```
1000 data 20,f7,b8    :jsr $b8f7    'zeroise fpac.1
1001 data 85,02       :sta $02      'and index
1002 data 20,0c,bc    :jsr $bc0c    'transfer fpac.1 to fpac.2
1003 data a0,10       :ldy #$10     'put 16
1004 data 20,a2,b3    :jsr $b3a2    'into fpac.1
1005 data 20,2b,ba    :jsr $ba2b    'and x by fpac.2 - product in fpac.1
1006 data a4,02       :ldy $02      'get current byte
1007 data b1,1a       :lda ($1a),y  'of string
1008 data c9,41       :cmp #$41     'reduce down to 0-15
1009 data 90,02       :bcc $02d6    '
1010 data e9,08       :sbc #$08     '
1011 data e9,2f       :sbc #$2f     '
1012 data 20,7e,bd    :jsr $bd7e    'add to fpac.1
1013 data e6,02       :inc $02      'bump index
1014 data c6,19       :dec $19      'decrement string length
1015 data d0,e0       :bne $02c1    'if more then round again
1016 data 4c,f7,b7    :jmp $b7f7    'put fpac.1 into .y and .a
```

# Peek & Poke



## Reliable repairs

*The Tetrach, Brandon, Durham, writes*

**Q** **I have a serious complication concerning my Spectrum. The power socket has broken away from the circuit board rendering the computer virtually unuseable. I should be grateful if you could recommend someone who can make an effective and reliable repair for a reasonable price, say around £20 to £25.**

**A** In the classified pages of *Popular* there are details of a number of companies who repair Spectrums for around about your price range There should be no problem in getting a repair of this sort carried out quite quickly

As for recommendations . I usually reply Mancomp when asked this question because I used them once But as they now feature me in their advertisements I expect I'll get letters accusing me of all sorts of things There are quite a number of companies which offer good service

## Frozen comuter

*Darren Grayson, Sheffield, writes.*

**Q** **After trying your 'no listing' program for the Spectrum in the March 28th issue, I tried the saver with one of my own programs. It worked fine but the Poke to disable Break freezes my computer. What is wrong and more importantly how can I put it right?**

**A** The *Poke's* to disable *Break* should be:
Poke 23613, Peek 23730-8

This has the effect of causing the *Break* key to be ignored. It should not cause the computer to freeze, or anything else If you still experience problems, then I suggest that you have your machine checked out by your dealer

## Sudden demise

*John Entwistle of London, writes*

**Q** **In reply to the letter from Mr Stalker in the 28th March issue about the sudden demise of *Chip Shop* and particularly the *Basicode* programs. I too have been in contact with the BBC and seem to have had a little more luck.**

**I wrote asking about the proposed future of *Basicode* transmissions and promptly received a reply from a J P Reid, which being short I reproduce here.**

**"Thank you for your letter about *Chip Shop* and *Basicode*. At the moment we have no plans to broadcast another edition of *Chip Shop* or the software in *Basicode*. There may be further news towards the end of the year."**

**I had some difficulty in capturing the programs but found that, having done so, they were not really worth having anyway. The principle is still, however, good and it seems sad to give up at this stage.**

**Two further points, you can buy (for £17) a timer to avoid the antisocial hours problem, mine is made by Tempo and works very well. Secondly, I hear that *Basicode* is still being broadcast by Dutch radio.**

**A** I agree with the sentiments expressed in your letter, and feel that the BBC should reconsider their decision to drop the *Basicode* transmission.

I do not know when or even if, the Dutch are still broadcasting *Basicode*

# Arcade Avenue



## Complete solution

Now then, how about the next instalment of our complete *Castle Quest* solution as sent by David Noble

"Go left up the long flight of stairs and get captured by the next guard The sword and the ruby will be left in the passageway

"When you regain consciousness pick up the stool and throw it at the torch jumping at the same time

" Pick up the torch and the stool Drop stool underneath the overhang and jump up onto the stool and the overhang Throw torch to the right to start the bed burning

"When the guard goes past step down off the overhang, pick up the stool and leave the room Store the stool.

"Following the guard in the passageway, jump up to the ladder further along and wait for the guard to return other way "

When he passes come down off ladder go left and get the sword and ruby Return right and kill guard

"Jump back up to ladder climb it and go right till the end Down the long ladder then left along the long passage under the prison Near the edge of the fall at the end of passage jump left - you should land safely at the top of the ladder

"Press the function key to set the sword to be restored

"Holding nothing in your hand, jump right to land in the *Red* guard area Kill these guards store the sword and get the aqualung from the top right room in this area Walk left and step off edge and fall into water Go left and up the first ladder Up the next ladder about half way and jump across (right) to next ladder, then jump across to parapet with torch on it Stand over torch and jump right (make sure you are still holding aqualung) and pick up bucket as you fall Go left and up ladder.

"Drop aqualung and restore bucket, walk down ladder into water then climb straight back out (the bucket will now be full of water)

"Store the bucket and restore the sword Drop the sword. Restore the ruby and drop the ruby "

That's enough for now - just a couple of weeks left to go I must congratulate Micropower on the design of their game, the solution reads more like a plot for the Adventures of Zorro than a computer game!

How about seeing it on other machines?

A letter has appeared from a mysterious collection called 'The Langley Hackers' who have a routine for cracking into *Wizard's Lair* on the Spectrum. Enter this program and run it

*Entombed from Ultimate*

```
10  Border 1 Paper 1 Ink 6
    CLS
20  Print at 10,10; "LOAD TAPE"
30  For A = 23300 To 23324
40  Read B Poke A,B
50  Next A
60  Data 62, 255 221, 33, 0 0, 17,
    0, 0 205 86, 5, 62, 255, 221,
    33, 237, 239, 17, 77, 1 205 86
    5, 201
70  Randomise Usr 23300
80  Poke 60838,205
    Poke 60811,0
    Poke 60812,192
    Poke 60840,207
    Poke 60841 237
    Poke 60808,29
    Poke 6009,45
90  For C = 60879 To 60926
100 Read D Poke C,D
110 Next C
120 Randomise Usr 60790
130 Data 62, 201, 50, 196, 218,
    205, 64 31 221 33 239 237,
    17, 17, 0, 179 205 194 4 62,
    255 221 33, 87, 218 17 227
    18 205 194, 4, 201 3 78 47,
    72 65, 67, 78 83 82 83 32
    227, 12, 23 237 44 128 100
140 Stop
160 Save "W/LAIR" Line 10
```

Type in the above listing then load *Wizard's Lair* from beginning and wait for border to go black. The Screen will be a bit messed up but don't worry about this Place a blank tape in recorder and press record, then press any key A small bit of data will then be saved and when the border goes black again reset the Spectrum You will only need your new bit of data in the future, rather than the whole of the above program

To play Wizard type this - *Clear* 60699 Then *Load* back in your short data tape and play in *Wizard's Lair* from the beginning The game will load and stop You can then type in any of the following pokes *Poke* 25522,n = no of lives, *Poke* 25516,n - no of keys *Poke* 25517,n = no of rings *Poke* 25518,n = no of diamonds *Poke* 51419,n = no of weapons, *Poke* 47753n, =energy *Poke* 48640,0 gives you 255 lives when walking into skull, *Poke* 46825,0 you can pick as many objects as you like.

To start game *Randomise Usr* 24130 Thank you very much for those 'Hackers' - write again soon.

An old friend of the column is Terry Wase of Newton in Derbyshire who has sent in a method of getting infinite lives on *Entombed* on the Commodore without having all the business of messing around with the user port on the back

"Follow these instructions

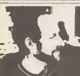
"*Open* 1(return) When *Found Entombed* appears press Commodore key *Poke* 783,1 *Poke* 832,48 · *Sys* 62828 (return) Once it stops again type *For* k = 679 to 767 *poke* k,peek(k+8192) *next* (return), *For* k = 828 *to Poke* k, *Peek* (k+8192) *next* (return) *Poke* 816 60 *Poke* 817,3 *Load* "NOVA"

"When ready message appears then *Poke* 2206,1 *Poke* 2213141 *Poke* 2214,231 *Poke* 2215,106, *Sys* 2128 and it will finish loading with infinite lives."

Finally there is just room to slip in congratulations to Ashley Glanister of Luton who is the first to write in having finished Vortex Software's excellent *Highway Encounter* back on 27th July

"After you finish the game you go past hundreds of monsters and you reach a ship which the lesertron destroys Then it all starts up again. I eventually gave up with a score of 22250 "

**Tony Kendle**



## Make a profit

This is the second week of *Dun Durach* – if you are currently playing this wonderful graphic adventure from Gargoyle Games and want a little advice then I suggest you contact those readers I mentioned last week

As you'll see, this week's Corner contains a map of *Dun Durach* – it's been sent in by D Goodwin of 18 Norman Way, Wallingford, Oxon OX10 0SS, and it and the accompanying information should be very useful to new players

The portals are not marked here, but work in a clockwise direction and go from Herne Hill to Marsh Street, from Marsh Street to Old Hill, from Old Hill to Amber Way and from Amber Way back to Herne Hill

As well as these portals, there are at least four secret doors – you can find these by looking for a completely blank piece of wall between two torches Try Myre Street, west of Downs Road Cross Street, opposite No 55 and Park Row east of Herne Hill (Dain lives here) If you follow a rate in the Soke, it will lead you to another secret door in Claw Lane east of Cinder Bank – this door leads to Darach Down and Teth the gaoler

Teth can be quite useful If you acquire a statue of the Rat from the gallery in North Wall and present it to Teth, he will give you a Key in return Now go to High Gate and enter the door into the castle

Treasure and the getting of it figures large in the hints of most readers The Assayer on West Way, opposite the Bank, sells gold bars for 600 Iridi, while you can sell them, at a tidy 200 Iridi profit, to the Broker at 52 Cross Street Another way of getting large sums of money, if you have the patience, is to go to the gambling houses in Idmaun and save the game – now bet all your money on 2-1 If you win, save the game again, when you lose reload a saved position.

What to do with all this money? A good idea is to go to the Thieves Guild and buy a licence – now if you keep this selected as you walk around, you will not be troubled by pickpockets

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 45 | Amber Way | Herald | 200 | Files | 10 | Long Lane | Skinner | 1800 | Moleskins |
| 55 | Amber Way | Argot Bank | | | 16 | Market St | Apothecary | 450 | Hemlocks |
| 67 | Amber Way | Portal | 200 | | 34 | Market St | Grocer | 150 | Peppers |
| 8 | Bird St. | Herbist | 100 | Rues | 20 | Marsh St | Portal | 200 | |
| 19 | Bird St. | Hall Dano | | | 31 | Marsh St | Broker | 380 | Spices |
| 90 | Bird St | Carpenter | 200 | Harnesses | 84 | Marsh St | Gallery | | |
| 82 | Cinderbank | Hall Parthal | | | 38 | Marsh St. | Hall Midir | | |
| 28 | Cinderbank | Magick | 1000 | Spells | 5 | Mead Sq | Broker | 750 | Remnants |
| 63 | Cross St. | Idmaun Ludun | | | 14 | New St | Barber | 130 | Razors |
| 87 | Cross St | Alchemist | 800 | Leads | 1 | North Wall | Streagroom | | |
| 89 | Cross St | Hall Belanus | | | 3 | North Wall | Gallery | 600 | Statues |
| 88 | Cross St | Antiquary | 500 | Relics | 24 | Oak Rd | Swordsmith | 500 | Foils |
| 18 | Dice St. | Idmaun Ludun | | | 27 | Oak Rd | Carpenter | 300 | Adzes |
| 41 | Downs Rd. | Idmaun Ludun | | | 88 | Oak Rd. | Salter | 150 | Drysalts |
| 88 | Heath Rd | Apothecary | 150 | Sloops | 10 | Old Hill | Minstrel | 1000 | Lyres |
| 1 | Herne Hill | Gallery | | | 15 | Old Hill | Portal | 200 | |
| 2 | Herne Hill | Portal | 200 | | 61 | Silver St. | Argot Bank | | |
| 4 | Herne Hill | Gallery | | | 88 | Silver St. | Assayer | 10000 | Flasks |
| 5 | Herne Hill | Argot Bank | | | 80 | Silver St. | Thieves Guild | 10000 | Licences |
| 1 | King St. | Vintner | 150 | Wines | 71 | Stone Rd. | Gallery | | |
| 3 | King St | Archivist | 700 | Books | 73 | Stone Rd | Magick | 2000 | Philtres |
| 4 | King St | Fletcher | 150 | Arrows | 1 | The Calls | Idmaun Ludun | | |
| 1 | Long Lane | Broker | 200 | Cloths | 2 | The Calls | Ladyds | | |
| 4 | Long Lane | Cobblers | 300 | Lace | 4 | The Parade | Farmer | 280 | Hoes |
| 5 | Long Lane | Armourer | 400 | Breastases | 5 | The Parade | Mercer | 150 | Swatches |
| 6 | Long Lane | Draper | 100 | Needles | 78 | West Way | Assayer | 600 | Gold Bars |
| 7 | Long Lane | Cooper | 380 | Barrels | 80 | West Way | Argot Bank | | |
| 9 | Long Lane | Broker | 200 | Grapes | | | | | |

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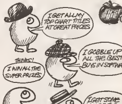
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**FOR SALE** CBM64 games Exploding Fist Mazlocs Flak Stunk Bike Gyroped Shades Ghouls Kokotoni Wilf Cavelighter Dralba Berzak Rocket Roger Kong £5 each and plenty more or swap Phone 01 555 9308

**PLEASE** buy me! I'm a Sharp Mz80-A as new single green monitor and cassette lots of software Pascal Fortran Assembler Basics Tools Arcade/Adv games yours for £150 one 061 733 2448

**EINSTEIN** with two drives 80 column card non green monitor all leads manuals and packing same software on ten discs sell £690 one (upgrading) Tel 01 572 2917 (Bill)

**CHARACTER** set collection this Spectrum program allows you to choose 1 of many character sets from a collection of 30 or define own sets A4 Sigmasoft 8 gine Dale Rainford Merseyside

**ELECTRON** computer b/w portable television cassette recorder books and magazines £25 of software and other commercial software including Elite and Starship Command All for £150 Tel 0621 74185 (Chelmsford area) anytime

**EPSON MX80** printer for sale BBC lead inc used very good working and general condition can be seen working, bargain at £95 Tel (0222) 707147 anytime

**EPSON HX20** portable computer Integral tape and printer Marvellous machine Ora TV adapter Many books programmes tapes etc including ideal horserace forecast games etc £250 Phone 01 840 3784

**PRISM VTX5000** £40 ZX printer £25 8 rolls paper £10 M Speech £15 M Slots £15 each RAM turbo £15 Fuller master unit £25 Light pen £12 DK tronics games player £7 All £158 Tel 0532 586757

**EPSON TX80** printer 120 cps £80 ono Tel Ashbourne 70845 anytime

**FOUR** computers/word processors Amstrad CPC464 tape WP Memotech MTX512 onward ROM Enterprise 128 ROM WP Spectrum dual drives centronics RS232 cartridge WP £150 each Daisy Wheel £150 Tel 0967 53076

**MAGAZINE** bargains Complete set of Personal Computer World 1978 1985 few missing Most Practical Computing (84 issues) Complete Acorn User Over 20 bytes Will throw out soon Offers to Richard on 01 369 4587

**ALPHACOM 32** Printer 18 months guarantee hardly used £36 S.w The Artist £6 50 Cash on delivery Good reason for sale Tel 0777 708386

**COLOUR** Genie 32K + LC24 data stabiliser Genie Club mags Mastering The Colour Genie book over £100 of software Sell £120 one Tel Helsby (09282) 3123

**COLOUR** monitor/TV 4½ in screen Toshiba C500 composite video input audio input so is computer or video professionals very mobile (3.4kg) Cost £350 Desperate offer at £100 one Delivered anywhere 061 795 2165

**40 TRACK** double sided disc drive offers wordwise plus manuals £40 disc docto £25 Phone 0388 51681 after 6pm

**SPECTRUM** software original new Very low prices Exploding Fist only £7 50 Spy v Spy £7 50 Frankie £6 many more call Radlett 2875 now or write to Daniel PO Box 94 Radlett Herts WD7 7AY

**DK TRONICS** speech synthesiser for the Amstrad used only twice and is perfect condition complete with speakers tape and instruction pack cost £33 will accept £27 50 ono Stan 593 8522 anytime

**ALPHACOM** 32 printer (for Spectrum) plus 4 rolls of paper hardly used £48 one Tel 01 272 1686 after 6 pm

**FOR SALE** Epson RX80 printer Serial and Centronics input £190 Also Alphacom printer £45 Both as new and boxed p/p extra Inst 4 Hillside Marham King's Lynn Norfolk Tel 0760 337463

**PRINTER** Alphacom 81 thermal dot matrix 80 columns tax and graphics Centronics interface spare paper rolls less than 8 month's old little used £75 ono Tel (02641) 54038

**FULLER FDS** keyboard Currah Microspeech + Microslot programmable joystick interface + two joysticks worth at least £130 sell for just £80 ono Also 16K Oric-1 for £45 ono Telephone 091 261 5663

**TI MODULES** Parsec Munchman Invaders Alpiner Video Games 1 Adventure Beginning Grammer Early Reading £4 each Phone 01-682 7582

**TWIN** disk drive 4040 for Commodore Pet etc only £200 Dave Murphy Llanerch-y-Medd Maringlas Anglesey Gwynedd Tel 0248-853581

**AMSTRAD CPC464** + colour monitor + modulator Inc original packing and manuals all in vgc Sell £218 ono (Bill) 01 572 2917 (after 6 30pm)

AMSTRAD CPC464 colour monitor DDI disk drive, light pen and utility Devpack assembler. Firm name specification manual, quantity of original games. Will deliver £375 ono. Phone 0734-700507

## QL for Sale

QL SOFTWARE Hyperdrive £11, Uno £15, Eva £5, ZKUL £15, DP sprite generator £15, DP monitor £10, Q Doctor £10, Harry £5, Assembler £10, Psion exchange £10 each. Tel 01 582 5203

SPECTRUM 48K + microdrive, interface 1, 12 cartridges, tape recorder, 35 software cassettes, Kempston joystick + interface + programmable sound generator, beep amplifier, ZX printer, 8 rolls paper, MC books + mags cost £600+. Sell £250 ono

ZX SPECTRUM 48K fitted with a Lowton microtech 68FX1 professional keyboard. Includes numeric entry pad. Also Currah speech unit. £78 of software all for only £130. Tel Birmingham 749 6178

SPECTRUM 48K low profile keyboard with sails menue and software workstation included. Sell £95 ono. 01 672 2617 (Beth)

SPECTRUM 48K with tape recorder, two programs + books for £70 ono. Mr M Williams, 45A Averill Street, London W6 8ED

SPECTRUM 48K, interface 1, microdrive, printer, Prestel, Currah microspeech, joystick interface, over £600 of software. All for only £180. Phone 041-639 4486 for more details. Also would consider swapping for CBM64

## Spectrums for Sale

48K SPECTRUM still under warranty, Interface 1 and Microdrive, DK Tronics double interface, over £200 of software, books and magazines. All worth £500, will accept £220 ono. Buyer collects

WAFADRIVE for Spectrum 48K with word processor, Flight Simulator and two blank 64K wafers. Unwanted gift. £90 ono. Tel 0905 426813 after 6pm

ORIGINAL AND PERFECT QL 128K RAM expansion £70, Metacomco BCPL £30, Computer One Pascal £20, QL Home Finance £15, Kempston Interface E £18. Tel 01 802 4878 or 0990 42571

48K SPECTRUM joystick + interface, ZX printer + 5 rolls of paper + software + two books, quick sale requires £100 ono. 01 330 5492

SPECTRUM plus 48K printer, Quick Shot II, Kempston Interface, pro data recorder, software worth £200, books, mags, everything for the enthusiastic starter, no offers £265. Tel Pat on 0636-852365 x 200 days

SOFTWARE and hardware for Spectrum Ghostwarlies Jet Set Willy, Cyclone, Cylon attack and more. Interface one, Microdrive, joystick and programmable interface. Phone (0487) 42429 and ask for Nick, hardly used

SPECTRUM OPUS disc drive 3 months old, under warranty + printer lead, lost £200. Sell for £155 ono + Atari XL translator chip, works all 400/800 sell for £22 ono. Tel Belden 383570

SPECTRUM software originals including Dun Darach, Frankie, Exploding Fist, Fourth Protocol, Shadowfire, Starion, Cauldron, Komplex and many others. Ring 870 3584 for full list and prices, sell in bulk or so 1

QL COLOUR MONITOR Prism 14" high definition, 2 weeks old (Can Show Bill) perfect, under guarantee. £170 ono, consider swap QL compatible printer, disk why. Tel 01 947 5111

SPECTRUM 48K with printer, Currah speech, 3-channel sound synthesiser, light pen, programmable joystick, cassette recorder, books, magazines and over £1,000 worth of software. £400 ono. Tel 0602-632567 after 5pm

SPECTRUM 48K and cassette recorder + programmable interface + joystick and over 30 games. Quick sale £186.96. Tel 741 2928

SPECTRUM 48K in a Saga Emperor keyboard with 2 x printer plus paper plus Currah microspeech with £150 worth of software. Phone Dorking 886177

SPECTRUM 48K Dktronics keyboard Kempston joystick and interface £200. Software cost over £400, bargain at £190. SaE to Mr C J Binney, 158 Ward End Park Road, Washwood Heath, Birmingham B8 2XA

SPECTRUM interface 3 + Kempston printer, one tape + 6 microdrive cartridges £55 ono. Tel Belden 383570

SPECTRUM 48K + tape unit and low profile keyboard + 100 tapes + microdrive + interface 1 + 10 cartridges £200 ono. Tel Belden 383570

48K SPECTRUM tape recorder, Protek switchable interface, Quickshot joystick, £183 of software, worth altogether over £350, sell for £150, no split. Tel 0773-608789 after 6pm (Chris)

## Wanted

WANTED CBM64 — C2N will pay reasonable price or will swap BBC — £200 extras II CBM64 has disk drive as well. Will sell BBC separately. Phone after 5pm

WANTED any Atari disk drive. Will pay up to £100. Telephone Penzance 66838 after 6.30

WANTED Atari 810 disk drive with or without happy. Phone Simon 021 422 6585 after 6pm

WANTED memotech centronics interface for ZX81 also PSS Q save 01-452 2606

SWAP my Oric 48K computer, boxed as new for SLR 35mm camera or lenses for Pentax PK or Olympus OM or motor drive winder etc. Any offers? Paul 08864 588 (Worcester)

520-ST I am looking for tips and advice on all aspects of ST programming. Please contact Paul Taylor, 97 Shelley Street, Kingsley, Northampton NN2 7HZ or phone (0604) 717801

WANTED BBC B disc drives (two) Cumana CD800/S dua 70/80 (rack or similar must be metal cased), will pay up to £200, only perfect condition accepted. Wull Beeck 0790-720843 (evenings)

## ADVENTURE HELPLINE

**Return to Eden on BBC** I have crossed the river and found the parcel a cent, but where do I go from here? M. Purnell, Quantoc, St Mary Church, Cowbridge, S. Glamorgan (Cowbridge 2122)

**Castle Quest on BBC** What do I do with the wand? Richard Grey, 8 Arundel Close, Gainsborough, Lincs.

**Mordon's Quest on Spectrum** What's the reply to Tarzan's question, Who is the king of the jungle? F Wilson, 11 Cedar Road, Bankmock, Stirlingshire

**The Fourth Protocol on C64** Which doors do I lock in building 17? Peter Hartley, Saegee, Town Street, S Killinghome, South Humberside DN40 3BZ

**Red Moon on CPC 464.** Where is a the torch to light the lava filled chamber? Send SAE if help needed with **Return to Eden, Forest at World's End,** and **Jewels of Babylon.** Natasha Christine Silver, 6 Goldhanger Close, Rayleigh, Essex SS6 9RX

**Eureka on Spectrum** How do I get out of the smaller room (chapter 5) and what must I do then? Jason O Shea, Tandy House, Marcross, Nr Llantwit Major, South Glamorgan CF6 9ZC

**Savage Island on BBC** Any help — can this really be solved? Mark James, 96 Whitecote Cottages, Whitecote lane, Bramley, Leeds, West Yorkshire

**Return to Eden on Amstrad.** How do you get out of the leviathan? Cone MacEvilly, 16 Kilteragh Pines, Westminster Road, Foxrock, Dublin 18, Republic of Ireland.

**Message From Andromeda on Amstrad.** How do I get past the fierce scaled creature and how do I use the explosives? E Wilson, 7 Gawthorpe off Dukes Brow, Blackburn, Lancs

**Possibility Experiment on BBC** Any help at all welcome as I am completely stuck. P Gates, 8 Mountview Road, Hornesey, London W4

**Classic Adventure on Commodore 16.** How do you get past the troll on the rickety bridge? Spencer James, 213 Derlwyn, Dunvant, Swansea

**Trial of Arnold Blackwood on Amstrad.** How do I get past the dog? How do I use the flashlight? What do I do in the entrance hall after going through the oak door? Stephen Newton, Boedaramede, 1a Cog Road, Sully, South Glamorgan (0222 530879)

**The Helm on Spectrum** What do you do with the griffon? Drian Burch, 96 Park Hill, Moseley, Birmingham B13

**Message From Andromeda on Amstrad.** How do I get past the alien commander? Roger Wilson, 7 Gawthorpe off Dukes Brow, Blackburn, Lancs

**Zork I on C64.** I can't kill the thief. I can't open the grid on wooden door. I can't escape with the diamond from the mine. Matteo Vaccari, V Sadorno 23, 24100 Bergamo, Italy

**Hampstead on BBC B** Where and what do you find in the industrial estate? Marcus Bartram, 10 Edgecombe Road, Stowmarket, Suffolk IP14 2DN

**Quest For the Holy Joystick on Spectrum.** Any help welcomed. I can offer help in exchange with **Sword of the Ring.** Mrs V Lawless, 18 Culross Avenue, New Moston, Manchester M10 0SR

**Quest on Spectrum.** How do I get into the castle? **Ship of Doom on Spectrum.** How do I get the key? William Colho, 79 Esme Road, Showell Green, Birmingham B11 4NJ

**Voodoo Castle on Vic20.** I can't get through the crack. I've got the ju ju bag and just about everything else! Sean Lihle, 10 Malvern Walk, Oakham, Leics

**Valkyrie 17 on Spectrum** How do you get to the diamond? I have been all round the village and the aeroplane hanger. Eleanor Barrell, 18 Stokholm Crescent, Paisley PA2 8TA

**Sherlock on Spectrum.** How do I convince Lestrade who the murderer is? How do I solve it? David Hartley, 112 Lodge Lane, Newton, Hyde, Cheshire SK14 4JY

**Magic Mountain on Spectrum.** How to get through the two mazes. Alex Airabie, 17 Muirhouse, Motherwell, Lanarkshire ML1 2LR

**Sherlock on Spectrum** Stopping Lestrade wrapping up by one. I know I have to get letters but I can't get to the opium den in time. Gavin Paisley, 96 Thomas Moore Road, Walkinstown, Dublin 12, Republic of Ireland

**Witches Cauldron on Spectrum.** I'm having trouble changing from ape to human. Anybody help? Paul McLane, 148 Mortimer Road, South Shields, Tyne and Wear NE34 0RW

**The Helm on C64** How do you enter the store but clear the mountain pass and get to the cave? Spencer Hill, 12 Cavalier Drive, Blacon, Chester CH1 5JY

**Snowball on C64.** Where can I get a battery for the lamp? Chris Medcalf, 82 Winstanley Road, Sale, Cheshire

**Emerald Isle on Amstrad** I'm stuck in areas around the tree and beach. I can't find a way out of these areas and I can't find anything in the mine. Ben Taylor, 36 St Mark Drive, Colchester CO4 4LP

# COMPUTER SWAP

Computer swap entries are limited to 30 words. All entries cost £2.50 and can be accepted by telephone if a Visa/Access number is given. Please enclose a cheque or postal order or give Access or Barclaycard No in the box provided. Only text appearing in the grid will be printed. Send the form to Computer Swap, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PP

**PLEASE NOTE** All software offered through computer swap must be in original condition and for private sale only. No advertisements for lists of software will be accepted.

It can't be swapped

**Warning** It is illegal to advertise pirated software

# COMPUTER SWAP

Please write your copy in capital letters on the lines below

| | | | | |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Name ..........

Address ..........

Tel phone ..........

*Please charge my Visa/Access card no*

# Charts



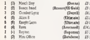
## Amstrad

| | | | | |
|---|---|---|---|---|
| 1 | (1) | Way of the Exploding Fist | (Melbourne House) | £8.95 |
| 2 | (4) | Finders Keepers | (Mastertronic) | £1.99 |
| 3 | (7) | Chiller | (Mastertronic) | £1.99 |
| 4 | (2) | Frank Bruno's Boxing | (Elite) | £8.95 |
| 5 | (3) | Nonterraqueous | (Mastertronic) | £1.95 |
| 6 | (9) | Scrabble | (Leisure Genius) | £9.95 |
| 7 | (8) | Beach-head | (Access/US Gold) | £9.95 |
| 8 | (9) | Red Arrows | (Database) | £8.95 |
| 9 | (10) | Locomotion | (Mastertronic) | £1.95 |
| 10 | (–) | Air Wolf | (Elite) | £8.95 |



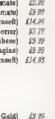
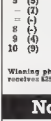
## Atari

| | | | | |
|---|---|---|---|---|
| 1 | (1) | Chop Suey | (English Software) | £9.95 |
| 2 | (6) | Mig Alley Ace | (Microprose/Trans-Atlantic Simulations) | £9.95 |
| 3 | (–) | Red Moon | (Level 9) | £9.95 |
| 4 | (2) | Ghost Chaser | (US Gold) | £9.95 |
| 5 | (9) | Boulder Dash | (First Star/Mirrorsoft) | £9.95 |
| 6 | (–) | Atari Smash Hits | (English Software) | £9.95 |
| 7 | (–) | F15 Strike Eagle | (Microprose/US Gold) | £9.95 |
| 8 | (–) | Panman | (Konami/US Gold) | £9.95 |
| 9 | (3) | Bounty Bob Strikes Back | (Datasoft/US Gold) | £9.95 |
| 10 | (–) | Pinball Construction Set | (Electronic Arts/Ariolasoft) | £14.95 |



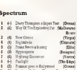
## BBC

| | | | | |
|---|---|---|---|---|
| 1 | (1) | Match Day | (Ocean) | £9.95 |
| 2 | (2) | Beach head | (Access/US Gold) | £9.95 |
| 3 | (3) | Combat Lynx | (Durell) | £8.95 |
| 4 | (5) | Alien 8 | (Ultimate) | £9.95 |
| 5 | (6) | Knight Lore | (Ultimate) | £9.95 |
| 6 | (4) | Revs | (Acornsoft) | £14.95 |
| 7 | (–) | Repton | (Superior) | £5.75 |
| 8 | (3) | Mini Office | (Database) | £5.99 |
| 9 | (–) | Wizadore | (Imagine) | £8.95 |
| 10 | (–) | Elite | (Acornsoft) | £14.95 |


## Commodore 64

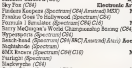
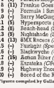
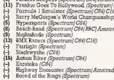
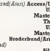
| | | | | |
|---|---|---|---|---|
| 1 | (2) | Summer Games II | (Epyx/US Gold) | £9.95 |
| 2 | (1) | Sky Fox | (Electronic Arts/Ariolasoft) | £8.95 |
| 3 | (6) | New Games | (Virgin) | £8.95 |
| 4 | (4) | Beach Head II | (Access/US Gold) | £9.95 |
| 5 | (5) | Way of the Exploding Fist | (Melbourne House) | £9.95 |
| 6 | (7) | Barry McGuigan's World Championship Boxing | (Activision) | £9.95 |
| 7 | (–) | Kik Start | (Mastertronic) | £1.99 |
| 8 | (–) | Hypersports | (Imagine) | £8.95 |
| 9 | (8) | Karateka | (Broderbund/Ariolasoft) | £9.95 |
| 10 | (–) | Blackwyche | (Ultimate) | £9.95 |

## Spectrum

| | | | | |
|---|---|---|---|---|
| 1 | (–) | Daley Thompson's Super Test | (Ocean) | £6.95 |
| 2 | (1) | Way Of The Exploding Fist | (Melbourne House) | £8.95 |
| 3 | (4) | New Games | (Virgin) | £8.95 |
| 4 | (8) | Nightshade | (Ultimate) | £9.95 |
| 5 | (3) | Frank Bruno's Boxing | (Elite) | £6.95 |
| 6 | (9) | Hypersports | (Imagine) | £8.95 |
| 7 | (6) | Highway Encounter | (Vortex) | £9.95 |
| 8 | (–) | Fairlight | (The Edge) | £9.95 |
| 9 | (7) | Frankie goes to Hollywood | (Ocean) | £9.95 |
| 10 | (8) | Southern Belle | (Hewson Consultants) | £8.95 |

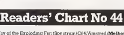
All figures compiled by Gallup/Leisurescope

## Top Twenty

| | | | |
|---|---|---|---|
| 1 | (1) | Way of the Exploding Fist *(Spectrum/C64/Amstrad)* | Melbourne House |
| 2 | (2) | Daley Thompson's Supertest *(Spectrum)* | Ocean |
| 3 | (7) | Frank Bruno's Boxing *(Spectrum/Amstrad)* | Elite |
| 4 | (3) | Now Games *(Spectrum/C64)* | Virgin |
| 5 | (4) | Summer Games II *(C64)* | Epyx/US Gold |
| 6 | (6) | Sky Fox *(C64)* | Electronic Arts/Ariolasoft |
| 7 | (8) | Finders Keepers *(Spectrum/C64/Amstrad/MSX)* | Mastertronic |
| 8 | (11) | Frankie Goes To Hollywood *(Spectrum/C64)* | Ocean |
| 9 | (–) | Formula 1 Simulator *(Spectrum/C64/C16)* | Mastertronic |
| 10 | (–) | Barry McGuigan's World Championship Boxing *(C64)* | Activision |
| 11 | (5) | Hypersports *(Spectrum/C64)* | Imagine |
| 12 | (8) | Beach-head *(Spectrum/C64/BBC/Amstrad/Atari)* | Access/US Gold |
| 13 | (9) | Nightshade *(Spectrum)* | Ultimate |
| 14 | (13) | BMX Racers *(Spectrum/C64/C16)* | Mastertronic |
| 15 | (–) | Fairlight *(Spectrum)* | The Edge |
| 16 | (–) | Blackwyche *(C64)* | Ultimate |
| 17 | (15) | Action Biker *(Spectrum/C64)* | Mastertronic |
| 18 | (–) | Karateka *(C64)* | Broderbund/Ariolasoft |
| 19 | (–) | Highway Encounter *(Spectrum/Amstrad)* | Vortex |
| 20 | (–) | Bored of the Rings *(Spectrum)* | Silversoft |

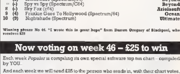
Figures compiled by Gallup/Leisurescope



## Readers' Chart No 44

| | | | |
|---|---|---|---|
| 1 | (1) | Way of the Exploding Fist (Spectrum/C64/Amstrad) | Melbourne House |
| 2 | (2) | Hypersports (Spectrum/C64) | Imagine |
| 3 | (5) | Summer Games II (C64) | Epyx/US Gold |
| 4 | (8) | Red Moon (Spectrum/C64/BBC/Electron/Amstrad) | Level 9 |
| 5 | (5) | Frank Bruno's Boxing (Spectrum) | Elite |
| – | (7) | Shadowfire (Spectrum/64) | Beyond |
| = | (-) | Spy vs Spy (Spectrum/C64) | Beyond |
| 8 | (-) | Sky Fox (c64) | Ariolasoft |
| 9 | (4) | Frankie Goes To Hollywood (Spectrum/64) | Ocean |
| 10 | (9) | Nightshade (Spectrum) | Ultimate |

**Winning phrase No 44. "I wrote this in great hope" from Darren Gregory of Blackpool, who receives £25**



## Now voting on week 46 – £25 to win

Each week *Popular* is compiling its own special software top ten chart – compiled by YOU.

And each week we will send £25 to the person who sends in, with their chart votes, the most original (witty, neat or clever – but never rude) phrase or sentence made up from the letters (you don't have to use them all) in the titles of the top three programs in this week's Readers' Chart, published above

You can still vote in the chart without making up a slogan – but you won't be in with a chance of winning the prize

All you have to do is fill in the form below (or copy it out if you don't want to damage your magazine) and send it off to Top 10, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 7PF

**Voting for Week 46 closes at 2pm on Wednesday October 9 1985. Entries received after that time will not be eligible for inclusion in that week's voting. The judges decision is final. Only one entry per individual per week will be allowed.**

**Name** ........................................ **My top 3: Voting Week 46**

**Address** ........................................ 1........................................

........................................ 2........................................

........................................ 3........................................

**My phrase is:** ........................................

# New Releases

## SUN & FUN

If *Hampstead* had you in stitches you'll love *Terrormolinos*. If you found *Hampstead* incomprehensible because of its demand that you succeed in some obscure social rituals you might still find *Terrormolinos* gripping

*Terrormolinos* is sun, fun, and gippy tummy in a two week holiday incarcerated in the horror packed Spanish resort of Terrormolinos The game requires you to collect 10 photographs of key situations in the game – you have to decide what the right situation is

A correctly taken photo will form in front of your very eyes using a spurious 'technique' called Saucyvison. What it amounts to is that these graphic screens have been cleverly designed to look just like seaside postcards

Package tours to Spain afford plenty of opportunities for cheap, tawdry, tasteless, trite, foolish, jingoistic and cliched jokes and they're all here and they're pretty funny actually What the game consists of is everything you might expect – get the plane find the hotel, excursions etc etc It makes for a surprisingly addictive adventure with lots of originality

One small point I could be wrong but like *Hampstead* I think a lot of this program was written with the *Quill* – is there a mention of this on the cassette insert? No

**Program** *Terrormolinos*
**Price** *£9 95*
**Micro** *Commodore 64*
**Supplier** *Melbourne House*
*Castle Yard House*
*Castle Yard*
*Richmond*
*TW10 6TF*

## TACTICAL

*Starquake* is easily the best thing Bubble Bus have ever done for the Spectrum It looks like an Ultimate game of the *Underwurlde* period but has plenty of new ideas hundreds of screens and a good dose of humour

There seems no escape from collecting things but the variety of objects, cleverness of the design and pace of this game make it the very best of its type Like *Dynamite Dan* its technical superiority lifts a well tried idea out of the usual rut of superficially similar games

There are 512 screens chock full of the usual monsters To get around there are both teleports scattered about (but you'll need to

Pick of the week

## MASSED BADDIES

Marsport is the latest game from Gargoyle Games Early reports of the game had suggested it to be of a more arcade orientated nature, but those obsessive adventurers who loved the early games will find little to complain about.

The setting is futuristic rather than derived from ancient myth, but as ever it's one good guy against massed baddies – in this case nasty insect like creatures called the Sept who walk around on two spindly legs

Your hero is John Marsh whose impossible task it is to retrieve some vital plans from somewhere in the vast city of Marsport.

As you might expect this involves a host of lesser objectives and avoiding not only the Sept but also the inbuilt defensive mechanisms of the city

John Marsh has at least one thing in common with dear old Cuchulainn – that determined stomp However, he has one potential advantage in the shape of a laser If you can find it, and more to the point actually grab it, the laser forms an important part of the game you can blast things to bits with it

This is what the kids have been waiting for – an adventure game with destruction as well!

Graphics may actually be an improvement on *Dun Darach*, same detailed central figure but more complex backgrounds and a variety of animated objects

To my not wholly committed adventuring mind this is the best yet from Gargoyle and it bridges beautifully the nebulous gap between 'the sort of games that adventurers like' and 'the sort of games that arcade addicts enjoy' neither will regret buying this one At this very moment Tony Bridge and Tony Kendle are fighting out with laser cannon and poisoned orc daggers as to who gets to feature it first in the columns

**Program** *Marsport*
**Price** *£9 95*
**Micro** *Spectrum*
**Supplier** *Gargoyle Games*
*74 King Street*
*Dudley*
*West Midlands*
*DY2 8QB*

| *Program* | *Type* | *Micro* | *Price* | *Supplier* |
|---|---|---|---|---|
| **Argo Navis** | Arc | Amstrad | £8 95 | Kuma Computers |
| **Lords of Midnight** | Ad | Amstrad | £9 95 | Amsoft |
| **On The Run** | Arc | Amstrad | £8.95 | Design Design |
| **Tiny Touch and Go** | Ed | BBC | £15.95 | Dorling Kindersley |
| **Colossus Chess 4** | S | Commodore | £9 95 | CDS |
| **The Neverending Story** | Arc | Commodore 64 | £9.95 | Ocean |
| **Pools Aid** | Ut | Commodore 64 | £14 90 | Tamassy |
| **Barnstormer** | Arc | MSX | £9 95 | Electric Software |
| **AH List** | Ut | Spectrum | £15 00 | AFI Software |
| **Fun n Games** | Arc | Spectrum | £4 95 | New Generation |
| **Hacker** | S | Spectrum | £9 95 | Activision |
| **Marsport** | Arc | Spectrum | £9 95 | Gargoyle Games |
| **Murderhunt** | Ad | Spectrum | £2 50 | Bodkin Software |
| **Starquake** | Arc | Spectrum | £7 95 | Bubble Bus |
| **The Neverending Story** | Arc | Spectrum | £9 95 | Ocean |
| **Tiny Touch and Go** | Ed | Spectrum | £15 95 | Dorling Kindersley |
| **10 Pack** | Arc | Spectrum | £10 00 | Automata |

**Key Ad** adventure **S** – strategy simulation
**Arc** – arcade **Ut** – Utility
**Ed** education

know what area you're aiming for since they require a password) and little hover platforms that will lift you through the air You also have a supply of building gear which can be used to get you over rocks and boulders if you don't have a hover platform handy

The eventual aim is to pick up a number of items and take them to a central core I like the fact that 'you' are a Mr Man like blob, hardly the usual stuff of heroes, and some nice animated touches also give the impression that you are not particularly fearsome But if the game is a little cutesy it isn't easy Some of the objects are very difficult to find, and working out when you must and mustn't have a hover platform becomes a complex tactical element to the game.

Here and there you will discover some massive graphics, teleports, security doors, lifts, that all have the same superb detail that marks Ultimate games Every time I play this game I discover something new – it is packed with ideas and is a must for any arcade addict

One tiny quibble all the packaging elements blurb, list of features, loading screen are incredibly Ultimatesque – I found it faintly annoying, the game stands up as something special and distinctive on its own

**Program** *Starquake*
**Price** *£7 95*
**Micro** *Spectrumn*
**Supplier** *Bubble Bus*
*87 High Street*
*Tonbridge*
*Kent*

## LANGUAGE

The Amstrad has been well supplied with computer languages, although many of them are disc based.

There are now at least two versions of Forth, the most recent of which – Fig Forth – is in truth a beefed-up version of the Fig Forth of old

It has been expanded to allow, amongst other things, full sound and graphics control and even joystick commands

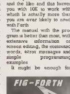
The program uses 34K, the extensive set of command words (some 340 of them) uses a further 10K Other memory is set aside for stacks and the like and this leaves you with 10K to work with which is actually more than you are ever likely to need with Forth

The manual with the program is better than most, with extensive information on screen editing, the command words, error messages and simple programming examples

It might be enough for some preliminary work with the language but you'll probably need another book for detailed work

At £9 95 this looks to be a powerful package at a low price – most of its competitors are well over twice the price

**Program** *Fig Forth*
**Price** *£9 95*
**Micro** *Amstrad*
**Spplier** *Interceptor Micro's*
*Lindon House*
*The Green*
*Tadley*
*Hampshire*




## EXPENSIVE

Time was when New Generation were creating some of the most interesting games around – perhaps they still are a new *Trashman* game is on the way apparently – but *The Custard Kid* is not one of them

When a press release says something like 'uncomplicated action but in no way lacking the essential addictive ingredient' you know the company doesn t think much of the game either

*The Custard Kid* is, I should add quickly the first of a new budget range from New Generation and at £1 99 I d have no complaints, but £4 95 definitely isn t budget enough.

The game is a multi-room, ample sprites affair The idea apparently is to collect 12 custard recipes found in various rooms around the custard factory

Getting to the rooms involves finding keys of the right colour (eg, a blue key opens a blue door) and maintaining your supply of energy as represented by the milk left in three milk bottles There are things to eat also hidden aroud

Here and there, detectors help you find recipes and other objects let you get past guards or turn baddies into food

Animation isn t sophisticated, graphics aren't impressive and the game doesn't have much by way of originality

It's not terrible but it's too expensive Only twelve months ago £5 50 was considered full-price for a Spectrum title Now £9 95 is more usual

It still seems odd to call £4 95 a budget price somehow, though

**Program** *The Custard Kid*
**Price** *£4 95*
**Micro** *Spectrum*
**Supplier** *New Generation*
*The Brooklands*
*Sunnybank*
*Lyncombe Vale*
*Bath*
*BA2 4NA*

**Activision,** 15 Harley House Marylebone Road, London NW1 01-935 1428 **AFI Software,** PO Box 149 London SW17 9LB **Amsoft,** Brentwood House, 169 Kings Road, Brentwood Essex CM14 4EF **Automate** PO Box 76, Southsea Hampshire PO4 9SL **Bodkin Software,** 16 Carr Lane Hambleton, nr Blackpool Lancashire FY6 9AZ **Bubble Bus,** 87 High Street Tonbridge, Kent TN9 1RX, 0732 355962 **CDS Software,** Silver House Silver Street, Doncaster South Yorkshire DN1 1HL, 0302 21134 **Dorling Kindersley,** 9 Henrietta Street, Covent Garden London WC2E 8PS 01 240 5151 **Electric Software,** 91 High Street Longstanton Cambridge CB4 5BS **Gargoyle Games,** 74 King Street Dudley, West Midlands DY2 8QB **Kuma Computers,** Unit 12, Horseshoe Park, Horseshoe Road Pangbourne Berkshire, RG8 7JW **New Generation,** The Brooklands Sunnybank Lyncombe Vale Bath BA2 4NA **Ocean,** 6 Central Street Manchester M2 5NS **Tamesay,** 33 Mather Street Blackpool Lancs



# Subtle revolution

One reason for the delay between the 'invention' of the microprocessor in 1971 invention of the microcomputer in 1975 must be the attitude of computer scientists

They don't like to see processing power wasted The computer science tradition is to use multi-user/multi-tasking to ensure 100% utilisation of processor time In a microcomputer with a single user the microprocessor is doing nothing for over 90% of the time It is just sitting there waiting for something to happen. This was viewed with abhorrance by traditional computer scientists

The 90% of wasted processing power could and should be put to use Doing what? The simple answer has to be helping the user

The man/machine interface is still tilted far too much in favour of the machine and the solution is artifical intelligence Sophisticated AI routines should be built into hardware and into systems and application software in order to make up for the inherent foibles of us mere mortals

One ridiculous example of user unfriendliness is the prevalance of different command structures between the operating system, the language and the application software This incompatability has actually become worse with some recent business machines pity the poor user The only way out is for the machine manufacturer to lay down the ground rules for all to follow

Apple has done this brilliantly with the Lisa concept The Macintosh is by far and away the world's most desirable computer In fact the word computer is a misnomer because it drags the Mac down to the level of other machines

The stupidity of current attitudes is evidenced with the Basic benchmark obsession. The benchmark has no bearing on the real world Firstly the better the Basic the slower the benchmark because better Basics have more commands and therefore larger look up tables Also better Basics have higher arithmatical accuracy

A far more sensible attitude would be to take the computer and the relevant application package and find out how long it takes to do job Like next year a cash flow forecast. If measurements like these were used based on everyday real world use of microcomputers then Apple would not be able to keep up with the resulting demand

The Macintosh is an intelligent coherent design containing the best and latest features of user friendliness The system software is so good it forces the application package to be likewise The integrity of the design is demonstrated by the simple fact that removing the mouse makes the machine unusable

Compare this with the IBM PC which is merely a cobbled together kit of proprietary parts A convincing example of the power of marketing over product In a pathetic attempt of plagiarism mouse/window/icon systems are now available for the PC

The important thing about the Mac is that it has shown the way The next generation of business products will all feature an integral mouse/window/icon system as a matter of course, otherwise no one will want them What is interesting is that the same features are beginning to filter down to the home machines making them in turn more useable It is happening with the ST and the Amiga. The extra manufacturing cost is minimal

Lisa concept technology has changed the course of all computing irrevocably in favour of the user But this is just a beginning

Semiconductor memory quarters in cost every three years more or less The current generation of microprocessors have prodigous addressing capabilities – far more than any currently conceivable general use application package will need

The time has come to take the paper out of computing and more specifically the paper of the instruction manuals The hardware and system software manuals should be built into the Rom of the machine and the manuals for the application packages should load into Ram alongside the package itself. These manuals should not just be sequencial text like the paper manuals they replace they should incorporate AI techniques to anticipate the information requirements of the user Like a pan-galactic help button. The benefits of this approach are awesome The acclimatisation time for new hardware or software would be virtually nil and the incidence rate of errors could be reduced to a similar amount The mental stumbling block of the great unwashed masses coming to grips with computers would be removed

The important thing to keep in mind about AI is that it won't happen overnight. There will be a gradual and subtle revolution as yet more AI techniques are incorporated into contemporary product. Expert systems will filter into successively more relevant sectors of our society Input/Output devices will become progressively more human engineered until free speech is attained

Knowledge Engineer will become a prestigious job title.

**Bruce Everiss**



# Not quite perfect

**Puzzle No 177**

Can you find the answer to this puzzle?

i) It is a prime number
ii) It is one more than a perfect square
iii) All its digits are odd
iv) It contains each odd digit at least once
v) It is the smallest number which satisfies conditions i) to iv) above

What is this number?

**Solution to puzzle No 172**

The large blocks were ten inches ten inches, and four inches in size When cut they would produce 2084 smaller bricks half with paint on and half without.

```
10 LET A=3
20 FOR B=2 TO A
30 FOR C=2 TO A
40 LET U=(A-2)*(A-2)*(A-2)+(B-2)
   *(B-2)*(B-2)+(C-2)*(C-2)*(C-2)
50 LET P=(A*A*A+B*B*B+C*C*C)-U
60 IF U=P THEN PRINT A,B,C,P,U
70 NEXT C,B
80 LET A=A+1
90 GOTO 20
```

For a given cube of $n$ inches along each side to be cut as described, it will produce $(n-2)^3$ cubes of freshly sawn wood, and $n^3 - (n-2)^3$ cubes bearing paint on at least one face This is easily understood if you imagine an inner array of cubes surrounded by a 'shell' of painted cubes, one layer thick

As the question states that all blocks were cut the case of a single one-inch painted cube does not occur and all cubes must have been at least two inches along each edge

The program takes cubes of sides A, B and C units and calculates the number of painted and unpainted cubes that would arise in each case If both of these totals are equal the results are printed out

**Winner of Puzzle No 172**

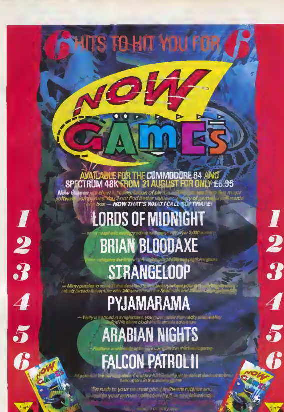
The winner is E Page of Claremont, Alloa, who receives £10

**Rules**

The closing date for Puzzle No 177 is October 30

# The Hackers

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